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CACDA JIFFY III WAR GAME
VOLUME IV
USERS MANUAL

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Fort Leavenworth, Kansas 66027

CACDA JIFFY III WAR GAME

VOLUME IV

USERS MANUAL

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This report is one of a set of five volumes produced to document the combat assessment methodologies and automated features of the Combined Arms Combat Development Activity (CACDA) JIFFY III War Gaming process, developed to support TRADOC SCORES scenario development and force evaluation efforts. This report provides a concise explanation of "how to game JIFFY." The automated features of the gaming process and the gamers interface are exemplified through a sample run. The other four volumes in the set are the Executive Summary (Vol I), Methodology (Vol II), the classified data and their sources (Vol III), and the Programmer's Manual (Vol V).

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FOREWORD

The Jiffy III War Game model was used in the development of the SCORES Europe III scenario, which provides the combat developments community with a common base of assumptions, threat forces, weapons, organizations, terrain, and tactics for the 1986 timeframe. The 1977 version of Jiffy was extensively modified and improved for the Europe III work. This report documents the Jiffy III model as used for Europe III and incorporates significant portions of the CACDA Jiffy War Game Documentation, Technical Manuals TR 2-77, TR 3-77, and TR 4-77, originally published in 1977. This report documents all the changes and improvements completed through March 1980.

There are five volumes of Jiffy III War Game documentation. The first volume is the Executive Summary. Volume II is the Methodology, which describes the overall Jiffy III War Game methodology including detailed descriptions of the combat assessment equations. The computer calculates the attritions based on these equations. The unclassified portions of the data are given in Volume II. Volume III contains classified data as required for the Jiffy III model. Volume IV is the Users Manual, which contains a discussion of the manual aspects and the automated features of the gaming process and exemplifies the relationship between them through some sample runs. Volume V, the Programmers Manual, consists of descriptions, and FORTRAN code of all programs and routines associated with the Jiffy III game.

This report was compiled principally by Dr. Channing L. Pao, Dr. Robert J. Schwabauer, Mr. Timothy J. Bailey, Mr. James H. Kennington and Mr. William D. Relph. The compilers want to acknowledge the SCORES gaming staff of the Combined Arms Combat Development Activity who served as consultants during the methodology improvement.

ABSTRACT

This report is one of a set of five volumes produced to document the combat assessment methodologies and automated features of the Combined Arms Combat Developments Activity (CACDA) Jiffy III war gaming process. The Jiffy process was originally developed to support the TRADOC Scenario Oriented Recurring Evaluation System (SCORES) scenario development and force evaluation efforts. In 1978, the 1977 version of the Jiffy was extensively modified and improved to support Europe III scenario gaming. This report documents the Jiffy model used for that gaming through March 1980. Volume II of this report contains the methodologies used in the automated routines of the Jiffy III Game. An unclassified data base, which was developed for test and demonstration purposes, is presented in Volume II. The classified data used in the Jiffy III Game during secure production runs, and their sources, are published separately as Volume III to keep the methodology volume unclassified. The other three volumes in the set are the Executive Summary (Volume I), the Users Manual (Volume IV), and the Programmers Manual (Volume V).

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CACDA JIFFY WAR GAME USERS MANUAL

1. PURPOSE AND SCOPE. The purpose of this manual is to provide a clear, concise explanation of "how to game Jiffy." It is intended to provide information to personnel familiar with war gaming but not familiar with specific Jiffy procedures. The Jiffy model continues to be modified or improved for new scenarios/studies. This report incorporates all the changes and improvements completed through October 1979; however, the general procedure has not changed.

2. JIFFY DESCRIPTIONS.

    a. General. Jiffy is a two-sided, computer-assisted, open war game. Players manipulate forces, using maps and performance indicators to simulate ground combat. Jiffy is an interactive war game capable of addressing indirect fire, armor/antiarmor, armed helicopter/air defense, dismounted infantry, and minefield play. (If the security condition warrants Jiffy can be run in a batch mode; however, some delay in response must be expected.) Resolution is normally battalion for Blue and regiment for Red. A rate of advance routine determines time to advance over terrain or the distance advanced in a given time.

    b. The Critical Incident. Jiffy divides a day of battle into critical incidents (CI). The time length of a CI is variable; it should be long enough to permit evaluation of selected parameters of battle, yet not so long as to lose the significance of major actions. A good rule of thumb is to have CIs 4 to 6 hours long. This length gives a good period of time for battles to take place, yet allows the gamer to influence the overall battle with his decisions. If the action is light, longer CIs may be used in order to decrease the real time to battle time ratio. The greater the influence of gamer judgment, the shorter will be the CI and the larger the real time to battle time ratio. Critical incidents should not be so short (less than 2 hours) as to imply that Jiffy is a high resolution game, which it is not designed to be. From experience, a 6-hour critical incident for a corps level battle allows gamers to influence the battle but still utilizes the computational ability of Jiffy for a relatively quick turnaround. If a division or lower is to be investigated, CIs might be slightly shorter. The concept of a CI is important to Jiffy since the entire game is basically a sequence of critical incidents. The setup of each critical incident follows the same procedures, as outlined below.

3. PERSONNEL REQUIREMENTS AND RESPONSIBILITIES.

    a. General.

        (1) A Jiffy Game requires about nine personnel, at least seven of whom should be military. If a game is extremely detailed, additional manpower may be required. Personnel are required in two main categories, control team and gamer teams, as follows:

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(a) Team chief.

(b) Control team.

 1. Chief controller (military).

 2. Assessment officer (military).

(c) Blue gamer team.

 1. Team commander (military).

 2. Assistant gamer (military).

 3. Statistician.

(d) Red gamer team.

 1. Team commander (military).

 2. Assistant gamer (military).

 3. Statistician.

(2) It must be emphasized that this gaming staff is only that which is required to play the game interactively. Analytical support, computer programming support, and secretarial support are not considered here. Likewise, if a particular field of military expertise or computer program analysis is needed, it must be provided from an outside source.

b. Team Chief and Chief Controller. The team chief is responsible for the overall gaming. He selects experienced military gamers and supervises the performance of the entire gaming staff to insure proper preparation, gaming, and reporting. After the team chief, the chief controller should be the person who is the most knowledgeable of overall military operations on the gaming staff. It is his responsibility to insure that the gaming maintains a logical flow. Since Jiffy is primarily an open game, the controller must impose constraints on the Blue and Red gamers to insure their actions are correct in a military sense, given the intelligence information they could expect to possess. Additionally, the chief controller must insure that actions not computerized within Jiffy are played logically. For example, a unit that has been heavily attrited cannot be brought up to strength immediately and committed because some organizational time is needed. It is the chief controller's responsibility to insure that the game produces the data and results that are needed by analytical personnel involved in a particular study.

c. Assessment Officer. The assessment officer is the person who actually plays the interactive Jiffy Game on the terminal. He must know

both the logic of the Jiffy Game and the tactical feasibility of the maneuvers. He works closely with both the chief controller and the gamers to insure the correctness of all actions. During the course of a critical incident, he works directly with the Red and Blue gamers on the map to define sectors and forces in that sector. It is the Red/Blue commander who determines what opposing forces face each other in the Jiffy model. He then inputs the forces and various parameters for each sector in Jiffy. The assessment officer must be capable of making the decisions, such as disengagement criteria, that are called for during the interactive mode. He is responsible for working closely with Red and Blue gamers to insure the teams receive the proper effects from combat and that the effectiveness of units is properly maintained. The assessment officer provides a written narrative describing the action that takes place in each critical incident. The chief controller is responsible for the data and results, but it is the assessment officer who maintains the actual liaison with any analytical staff to insure the game is accomplishing its objectives.

    d. Chief Gamer (Red or Blue). The chief gamer is responsible for organizing and employing his forces. His position is that of commander of his forces down to the resolution required. He must be able to maintain data on unit effectiveness. The chief gamer develops the concepts and provides the rationale for all maneuvers. He insures the map situation is current. With the assessment officer he determines the sectors to be used in each CI. The chief gamer provides a written narrative of his concept of operation and the rationale behind his concept. He should have a thorough knowledge of the tactical doctrine used by his forces.

    e. Assistant Gamer. The assistant gamer is concerned primarily with following the status of forces on his side. He assists the assessment officer with the initial force file creation for the game. He insures the forces in each sector are at proper strength and all necessary forces are included in a sector. He keeps his chief gamer informed of unit effectiveness and assists in maintaining the map board. He is responsible for close coordination with the assessment officer concerning the attrition of his forces during a critical incident. The assistant gamer coordinates the replacement policies of each side. In other matters he assists the chief gamer as directed.

4. METHODOLOGY.

    a. General. The methodology for playing a Jiffy Game may be considered in three major phases: preparation, critical incident gaming, and reports and results. It is essential to maintain a proper perspective throughout this procedure to insure Jiffy is not used for an investigation beyond its capability. The decisions made by the commanders are a major portion of the entire process and must be reflected effectively in each critical incident. The overall sequence of events is summarized in figure 1.

I	**PREPARATION PHASE**	GENERAL SCENARIO	EVALUATION OBJECTIVES TROOP LIST THREAT DATA TIME FRAME AREA OF OPNS WEATHER
		INITIAL GAMING PREPARATION	CMORS TERRAIN ANALYSIS CMORS GENERAL CONCEPT MAP DISPLAY OF OPPOSING FORCES ARRAY OF OPPOSING UNITS
II	**CRITICAL INCIDENT PHASE**	RATE OF ADVANCE	ADJUSTED MANEUVER FIREPOWER RATIO FIRE SUPPORT FIREPOWER RATIO AGGREGATE RATIO CONVERTED TO FEBA MOVEMENT (KPH) ADJUSTMENTS FOR NATURAL AND MILITARY ENVIRONMENT
		ATTRITION CALCULATIONS POSTPROCESSOR	INDIRECT FIRE ASSESSMENTS MINE WARFARE ASSESSMENTS ARMOR/ANTIARMOR ASSESSMENTS INFANTRY ASSAULT ASSESSMENTS AIR DEFENSE ARMED HELICOPTER ASSESSMENTS TACAIR (BY USAFTFWC)
		RELATIVE EFFECTIVENESS	PERSONNEL LOSS DISTRIBUTION MATERIEL LOSS DISTRIBUTION FIREPOWER SCORE OF SURVIVING WEAPONS
		CRITICAL INCIDENT ANALYSIS	MILITARY JUDGMENT ESTIMATE OF SITUATION CMORS DECISIONS REPLACEMENT POLICY UNIT DEPLOYMENTS
III	**REPORTS AND RESULTS**	GAMING REPORT	NARRATIVE DESCRIPTION OF BATTLE RATIONALE FOR GAMER TACTICS AND ORG INSIGHTS INTO FORCE STRENGTH/ DEFICIENCIES STATISTICAL DISPLAY OF BATTLE RESULTS

Figure 1. Jiffy war gaming process.

b. Preparation Phase.

(1) The preparation phase has two parts: the selection and implementation of the general scenario, and the preparation for the specific game. The general scenario part, although it is a prerequisite for any Jiffy Game, is usually done outside the game staff. It includes Blue and Red posture at the start of the game, time frame, area of operations, weather, and objectives of the game. The actual preparation by the gamers starts with the receipt of the general scenario and objectives of the game. In the initial preparation step the gamers prepare the map, conduct a terrain analysis, and array the opposing forces on the map as they would be positioned at the start of the game. While the chief Blue and Red gamers are developing their general concepts, the assistant gamers under the direction of the assessment officer create the TOE force structure files on the terminal. This step entails creation of four files:

(a) Standard reference code (SRC) file. In this file weapons are grouped under an SRC. These SRCs are the basic building block for the entire force. They may be platoon, company, or battalion size, depending on the resolution required. A library of SRCs has been built and is available for use, if appropriate.

(b) Unit file. In this file units are built based upon one or more SRCs. The units will generally be an organizational level below the resolution desired. This gives the gamer the ability to play part of a unit separate from the parent unit.

(c) Parent unit file. In this file, parent units are built based upon one or more units. This parent unit will be the organization at the level of resolution desired (usually battalion for Blue and regiment for Red).

(d) Force file. The force file is a consolidation of the first three files. This file is processed by the Jiffy game during the gaming of a CI. It contains the designation of each unit and the parent unit, the last CI the unit was involved in and its sector, and the status of all the weapon systems at the end of its last CI. Additionally, the current effectiveness of each unit is maintained in this file.

(2) A detailed example of how to create these files is contained in appendix A. The force file is the file from which optional displays of parent units, units, and their strengths are derived. When the loading of the starting forces is completed, the actual dynamic gaming of Jiffy may take place.

c. Critical Incident Phase. The critical incident phase of Jiffy is the major portion of the dynamic gaming process. Reference is again made

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to figure 1. The CI phase is an interactive process involving the four main steps indicated in figure 1: rate of advance, attrition calculations, relative effectiveness, and CI analysis. The critical incident analysis and the overall concept of the operation determine if another CI should be run. This procedure continues until the game reaches some predetermined termination point. The gaming usually starts with a meeting of the entire gaming staff in a gaming room, with the map and overlays showing starting positions. At this time background information and general concepts are briefed for both sides. The remainder of this subparagraph describes the steps taken each time a critical incident is run.

(1) Sectors defined. The chief gamers and assessment officer determine from the map board and the commander's intentions where battles take place and what forces are involved. This process in essence defines a sector. The entire FEBA may be subdivided into sectors, or sectors may be designated only in areas where some action is to take place. The CI is played in Jiffy sector by sector with no interaction between sectors. The sectors may vary in size and number from one CI to the next. Once the sectors have been defined by the assessment officer and chief gamers, the assistant gamers coordinate with the assessment officer in loading the forces for that sector. Any forces that would affect the battle and are employed in that sector must be identified to include infantry, armor, artillery, aviation, and air defense systems. Specifically, the assistant gamer from each side must insure that the forces in the force file are true and correct as a result of any replacements that might have arrived since the end of the last CI. If not he must access the force file and bring a particular unit up to strength. This is accomplished interactively utilizing the file handling features of the Jiffy Game. This force file update should be done prior to loading forces into a sector to save time.

(2) Force loads. After the terminal has been logged in, and the Jiffy Game assessed (see appendix B for this procedure), the gamer reaches the DECISION POINT. The interactive game centers around the DECISION POINT. Eleven options are available to the gamer:

. Load forces into a sector.
. Calculate rate of advance.
. Assess combat.
. Apportion combat losses to units.
. Display battle statistics.
. Display weapon arrays.
. Add SRCs to the TOE file.
. Restart at a previously gamed CI.
. End game and/or update HISTORY file.
. Reset element array.
. Reset terminal output.

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Forces may be assigned to a sector by assigning the parent unit (in which case all units in that parent will be assigned) or by assigning specific units from a parent unit. The ability to assign part of a parent unit to one sector and part to another satisfies the condition of a parent unit being engaged by more than one opposing unit, which allows it to be engaged at different intensities of combat.

(3) Rate of advance.

(a) Procedures. After the forces are loaded into a sector the rate of advance must be computed next. The questions that the assessment officer must answer are listed in figure B-4 of the example in appendix B. This routine must be completed prior to running any assessment routines. Basically, the rate of advance routine calculates a total firepower ratio, then enters a table for the given posture of opposing forces. If time is held constant, then distance advanced is computed; if distance is held constant, then time is computed. This routine is essential since it gives the closure rate of ground combat for the attrition routines. A detailed explanation of the logic and equations used in the rate of advance is found in the CACDA Jiffy III War Game Volume II.

(b) Gamer's inputs and considerations.

. Type engagement--fortified/prepared/hasty defense, delay, withdrawal, and meeting enegagement.

. Attacker posture--front attack, single envelopment, and double envelopment.

. Type terrain--open, rolling, hilly, and mountainous.

. Visibility.

. Mines/Barriers.

. Mounted/dismounted attackers.

. Duration of attack.

. Smoke--type, self-generated and frontage to determine percent obscured for both sides.

. EW--number missions available, and target priority for both sides.

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(4) Attrition calculated.

(a) Procedures. The assessment officer is concerned with five major attrition routines when playing the Jiffy Game: indirect fire, armor/antiarmor, mine warfare, attack helicopter/air defense and infantry assault. A detailed rationale and explanation of each of these assessment routines may be found in the CACDA Jiffy III War Game, Volume II. The descriptions here are limited to an explanation of the interface that takes place between the assessment officer and the program. After the rate of advance has been calculated, the program returns to the DECISION POINT. In order to run the assessment subroutines a "3" must be entered from the terminal. The program then cycles through the assessment subroutines in the following order:

. Tactical aircraft.
. Indirect fire.
. Minefields.
. Armor/antiarmor.
. Dismounted infantry.
. Attack helicopter/air defense.

The program asks the gamer if he wants to process each specific routine. If the response is no, that routine is skipped. If the response is yes, further questions are asked by the program. In each case the questions require the input of parameters that influence the attrition routines. At the end of each attrition routine there is the option of deleting the losses from the weapon system array in that sector. If everything has progressed satisfactorily the losses may be subtracted, and the program advanced to the next assessment routine. If for some reason the assessment officer wishes to replay that specific attrition routine, he would not subtract the forces. He must then return to the beginning of the cycle, not playing those assessment subroutines already satisfactorily played, until he again reaches the subroutine he wishes to replay and continue from there. A detailed example of the assessment questions is included in appendix B. This process is the heart of the interactive games.

(b) Gamer's inputs and considerations. The assessment officer must insure that the parameters put into the game accurately reflect the terrain, posture, and tactics of the force involved. His military judgment and coordination with both team chiefs is needed to make such decisions as when to pull out of a defensive position, or what intensity of artillery is being fired. Close coordination between the assessment officer and chief controller may be required here to insure that reality is represented as closely as possible. The gamers' inputs and considerations for the five major subroutines stated above are summarized as follows:

1. Indirect fire subroutine:

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. Number of firing batteries.

. Hours of fire support.

. Type of mission--final protective fire,
preparatory/counterpreparatory, counterbattery, AD
suppression. and combat support.

. Number of CLGP missions.

. EW--number of missions available and target
priority for both sides.

. Percent of smoke firers (degrades other fire
missions)--number of batteries available and
strength, desired smoke frontage, round
capability, and importance of other missions.

2. Minefield subroutine:

. Meters of minefield front.

. Mine density (per square meter).

. Fraction of minefield which can be
bypassed--deployment of units, number of units,
unit missions.

. Meters of trafficable terrain--map study of sector.

. Percent of force entering minefield--deployment of
units, number of units, unit missions, defender
strength/status, and type unit/strength.

. Type of minefield--conventional (laid mechanically
or manually) and FASCAM (GEMMS and artillery).

3. Armor/antiarmor subroutine:

. Number systems.

. Type of engagement--fortified/prepared/hasty
defense, meeting engagement, delay/withdrawal.

. Type terrain--open, rolling, hilly, and
mountainous.

. Visibility.

. Target range and percent engaged--mission of both
sides, range of last CI engagement, terrain,
avenues of approach, unit strength/mix of
vehicles/type unit, and length of time in position.

. Smoke and dust--number of batteries available and
strength, round capability, and importance of
other fire missions.

4. Infantry subroutine:

. Tactics employed--ambush, fortified/prepared/hasty
defense, meeting engagement, and delay/withdrawal.

. Forces engaged--fraction of forces and sector,
units to dismount, unit deployment/posture, and CI
length.

. Duration of combat.

5. Attack helicopter/AD subroutine:

. Weapons control status.

. Percent of AD committed--terrain, number of
systems, tactical deployment, suspected firing
positions, and perceived AH threat.

. ADA Target priority.

. Helicopter standoff distance and type AH attack
(autonomous/indirect)--mission, terrain, day or
night, cell composition, AD threat, and number of
AH/scouts available.

    (5) Losses apportioned. Once the attrition routines have been
played, the game returns to the DECISION POINT. In order to apportion the
combat losses from the sector to the proper forces in the force file, a
"4" must be entered. After the "4" has been entered, the combat intensity
of any unit may be changed. The combat intensity determines the amount of
losses apportioned to each unit. If one unit was in combat less than
another during the CI, it incurs a smaller proportion of losses. The
specific entries for given conditions of combat are as shown in table 1.
The routine distributes the losses to the units, and the gamer has the
option of seeing the new force structure at the completion of the
routine. An example of this routine is in figure 8-13 of appendix 8.

Table 1. Combat intensity entries for apportionment routines.

ENTER	FOR THIS STATUS
0	Uncommitted units
1	Units outside of direct fire
2	Reserve units committed late
3	Units on perimeter of MBA
4	Units in Main Battle Area
5	Units Hit by TACAIR

(6) Unit effectiveness determined. During the loss apportionment, the new relative unit effectiveness of each unit is computed. Simply, the unit effectiveness of a unit is the ratio of its present firepower score to the firepower score the unit started with. This computation, output on the Unit Status portion of the STATUS file (see appendix C), combined with the gamer's knowledge of the task organizations should be sufficient to provide a base for the military judgment used in decisions made during the analysis of the CI.

d. Reports and Results Phase. The final phase of the Jiffy War Gaming process is the results presented and the reports produced from those results.

(1) Results. For each sector there are two types of information recorded. First, each unit gamed in that sector has a record of losses and current remaining status of weapons. These unit displays also include the relative effectiveness of each unit. Each unit is reported separately and the aggregated status of the parent unit is reported also. Second, each sector has statistical tables showing loss by source of loss, loss and damage distribution, ammunition expenditure, and killer victim tables. Additionally, these tables are aggregated for an entire critical incident. A detailed description of the output from Jiffy is given in appendix C.

(2) Reports. The content of the game report may vary depending upon the objective of the game. However, there are certain areas that the report should contain as a minimum. There should be a narrative description of the game as it developed. This is usually the assessment officer's portion of the report. The rationale for gamer tactics and organizations is input by the chief gamers. Finally, insights into force structures (strength and deficiencies) should be reported. This last area may be expanded or contracted depending upon the purpose of the game.

e. Special Time Saving Features.

(1) Assessment testing. Although the Jiffy war gaming process plays unit location the assessment routines in the Jiffy program do not

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take this into account. Before assessment begins, the Jiffy program puts all the weapon systems into a single weapons array. This is one reason why the program is low resolution and why judgment and military craftmanship are so vital to the Jiffy war gaming process. The weapons array can be set directly. This is useful for sensitivity testing of software modifications and data changes.

   (2) Review of previous run. Sometimes many of the interactive answers of a sequence of runs are very similar. The user can review and interactively change selected answers of the last run and let the program automatically use the old answers that are appropriate for the current run.

   (3) Reset terminal output file. The user can decide what part of the interactive output he wishes to see at the terminal. This can be useful when running Jiffy at the terminal from a file of answers prepared in advance.

   f. General Time Saving Features. Two time saving features that do not require new decision points are given below.

   (1) Master answer file. The answers to a sequence of runs (for example, one for each sector of a CI) can be saved on a single file. If regaming of the CI is necessary because output is lost, for example, this can be done automatically from the master answer file.

   (2) Short answer file. A sector can be played with a partial answer file attached, say, through the rate of advance. After the answers on this file have been processed, the user can continue from that point with his terminal entries. This is particularly useful in debug runs where all answers to a certain point are the same for each run.

   g. Postprocessor. The output from Jiffy gaming is voluminous and consists of detailed unit status reports and game reports. All these reports pertain only to a critical incident (CI). The postprocessor is designed to provide specified game output reports as well as cumulative game output reports. The format of the loss by source-of-loss tables has been expanded to give losses by victim weapon system category in addition to victim weapon system type. The victim weapon system categories are the same as the killer categories. The postprocessor will enhance analyst and gamer efficiency and save time. Some of the specfic outputs and capabilities from the postprocessor are shown in appendix C.

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2. USAF Tactical Air Land Operations (TALON) Simulator, January 1977.

3. USACACDA, TR 4-77, CACDA Jiffy War Game Users Manual, March 1977.

APPENDIX A

SAMPLE RUN OF FORCE FILE

GENERATION PROCESS

APPENDIX A

SAMPLE RUN OF FORCE FILE GENERATION PROCESS

A-1. PURPOSE AND SCOPE. The purpse of this appendix is to provide the gamer and the assessment officer step by step procedures for the creation of a file of forces suitabie for processing by the Jiffy Game. An example of each of the programs used to generate such a force file is presented and discussed, in turn, below.

A-2. GENERAL. Basically three files are created to define units, and one file is created on which the data of the other three files are consolidated. The SRC (standard reference code) file, the UNIT file, and the PARENT file are the three files used to define the weapons of SRCs, build units from SRCs, and develop higher echelon parent units. The FORCE file is the file that contains all the information of the three files formatted for processing in the Jiffy Game. Initially, some empty files are created and given names. In the example presented here, the files are SRCFILE, UNITFILE, PARENTFILE, and FORCEFILE. To facilitate processing, interactive "call" files have been created that contain the control cards necessary to attach the proper files and execute the programs. In the following sample runs, the alpha-character responses input by the gamers are smaller than the letters in question displayed by the Jiffy Game program. Note, however, that there is no difference between a gamer response and a computer display for numerals.

A-3. "CALL" FILES. The sample runs presented in the following paragraphs are initiated by the use of "call" files. Listings of the five "call" files used for processing the runs in this document are given in figure A-1. Each of these files contains control statements that accomplish three basic requirements for running one of the programs. The requirements are: 1) connects input and output as required for interactive processing, 2) attaches the program and all the files the program operates on (a data file must be attached as CLDATA before the "call" files for the FORCE program or the Jiffy Games are executed), and 3) executes the program. The commands contained in the "call" files can be entered individually from the console. It should be noted, in fact, that some operating systems may not allow "call" files, in which case the commands would have to be input separately. All commands and I-O procedures demonstrated in this document are for the Control Data Corporation (CDC) 6400/6500 multiprocessor computer at Fort Leavenworth, Kansas. One point to be emphasized is that the local file names for the force-type files must be exactly as shown in figure A-1 when one of the programs is being run. For example, to run the Jiffy Game program, the FORCEFILE must be attached as TAPE55, the SRCFILE as TAPE9, and the HISTORYFILE as TAPE8.

```
                SRC CALL FILE

CONNECT,INPUT,OUTPUT.
ATTACH,LGO,SRCBIN,ID=SCORES,MR=1.
ATTACH,TAPE9,SRCFILE,ID=SCORES.
LGO.
. .



               UNIT CALL FILE

CONNECT,INPUT,OUTPUT.
ATTACH,LGO,UNITBIN,ID=SCORES,MR=1.
ATTACH,TAPE9,SRCFILE,ID=SCORES.
ATTACH,TAPE10,UNITFILE,ID=SCORES.
LGO.
. .



              PARENT CALL FILE

CONNECT,INPUT,OUTPUT.
ATTACH,LGO,PARENTBIN,ID=SCORES,MR=1.
ATTACH,TAPE11,PARENTFILE,ID=SCORES.
ATTACH,TAPE10,UNITFILE,ID=SCORES.
LGO.
. .



              FORCE CALL FILE

CONNECT,INPUT,OUTPUT.
ATTACH,LGO,FORCEBIN,ID=SCORES,MR=1.
ATTACH,TAPE6,PARENTFILE,ID=SCORES.
ATTACH,TAPE7,UNITFILE,ID=SCORES.
ATTACH,TAPE8,SRCFILE,ID=SCORES.
ATTACH,TAPE9,FORCEFILE,ID=SCORES.
LGO.
. .
```

Figure A-1. "Call" Files for the Force File Generation Process.

A-4. CREATION OF SRC FILE. The SRC file is intended to be developed in a manner consistent with the US Army's concept of Tables of Organization and Equipment (TOE). Each record consists of a name (SRC) and the type and quantity of weapons in the corresponding organization. A maximum of 22 different types of weapons can be entered in a given SRC. An example of a run of the SRC program is presented in figure A-2. In this example, arbitrarily consider item code 1 to be personnel, item code 2 to be tanks, and item code 3 to be APCs. As shown in figure A-2, the run is initiated by the gamer through the entry of the "call" command. This attaches cycle 1 of two files (SRCFILE and SRCBIN, a binary file of the compiled SRC program) and executes the program. Next, as shown in figure A-2, an "x" is entered to display all valid action codes. After this, a Blue tank platoon is entered onto the SRC file by entering an "a" action code, entering the name (1 to 10-character alphanumerics) for the Blue tank platoon SRC (BTANKPLT), and entering the type and quantity of each weapon in the Blue tank platoon. In this instance, 20 personnel, 5 tanks, and 1 APC are entered. Figure A-2 also contains examples of the other actions available to the gamer. The review action simply displays the type and quantity of weapons in a specific SRC. The change action allows the gamer to modify the quantities of one or more of the weapons in a given SRC. The delete option removes either an entire SRC from the SRC file or specific weapons from a given SRC. The list action displays all the SRCs with their weapons on the SRC file. The run is terminated by specifying an "e" action. For the sample run of other programs, which follows, the following SRCs have been put onto the SRC file with the proper Jiffy Game item codes:

   a. BAHCO - Blue attack helicopter company.

   b. BARTYBAT - Blue artillery battery.

   c. BARTYBNHQ - Blue artillery battalion headquarters.

   d. BMECHPLT - Blue mech platoon.

   e. BTANKPLT - Blue tank platoon.

   f. BTANKCOHQ - Blue tank company headquarters.

   g. RARTYBN - Red artillery battalion.

   h. RMECHCO - Red mech company.

   1. RTANKBNCP - Red tank battalion command post.

   j. RTANKCO - Red tank company.

```
CALL,RUNSRC,ID=SCORES
ENTER ACTION TYPE ( X FOR LIST)-          X

FOLLOWING ACTIONS MAY BE EXECUTED
R= READ (REVIEW) A RECORD
A= ADD A NEW SRC
C= CHANGE/ADD WPN ID'S/QTY'S WITHIN AN EXISTING SRC
D= DELETE AN SRC AND/OR WPN SYS ID WITHIN THE SRC
L= LIST ALL SRC'S ON FILE
E= END THE PROGRAM

ENTER ACTION TYPE( X FOR LIST)-           A

ADD - ENTER NEW SRC(END TO EXIT)--        BTANKPLT

ENTER WPN ID,QTY--0,0 IF DONE             1,20

NEXT- 2,5

NEXT- 3,1

NEXT- 0,0

ADD-ENTER NEW SRC(END TO EXIT)--          END


ENTER ACTION TYPE( X FOR LIST)-           R

READ-ENTER SRC(END TO EXIT)-              BTANKPLT

SRC=BTANKPLT          ID   QTY
                       1    20.
                       2     5.
                       3     1.
READ-ENTER SRC (END TO EXIT)-             END
```

Figure A-2.   Sample Run of SRC Program.
(Continued next page.)

```
ENTER ACTION TYPE( X FOR LIST)-        C

CHANGE-ENTER SRC(END TO EXIT)--        BTANKPLT

ENTER TOTAL NO. OF WPN SYS IDS
      1

ENTER WPN ID,QTY,ID,QTY,---
      1,23

CHANGE-ENTER SRC(END TO EXIT)--        END




ENTER ACTION TYPE( X FOR LIST)-        L

SRC= BTANKPLT         ID  QTY
                       1   23.
                       2   5.
                       3   1.




ENTER ACTION TYPE( X FOR LIST)-        D

DELETE-ENTER SRC(END TO EXIT)--        BTANKPLT

ENTER TOTAL NO. OF WPN SYSTEMS TO BE DELETED-ENTER 0 IF ALL        0

DELETE-ENTER SRC(END TO EXIT)--        END

ENTER ACTION TYPE( X FOR LIST)-        R

READ-ENTER SRC(END TO EXIT)-           BTANKPLT

SRC BTANKPLT   NOT ON FILE
READ-ENTER SRC(END TO EXIT)--          END

ENTER ACTION TYPE( X FOR LIST)-        E

ANY MORE FORCE STRUCTURES TO BE UPDATED?
      N

ALL DONE   JOB HAS ENDED
      STOP
```

Figure A-2.   Sample Run of SRC Program (concluded)

A-5. UNIT FILE CREATION. Once the gamer has specified all the SRCs necessary to initialize the scenario, a file of the combat units may be built. This is accomplished through the execution of the UNIT program. A sample run of the UNIT program is presented in figure A-3. As can be seen from the sample run, the process to build units from SRCs is similar to that of the SRC program. Again, the gamer initiates the run through the interactive "call" command, which attaches three files (SRCFILE, UNITFILE, and UNITBIN, the UNIT program compiled binary file) and executes the program. The "x" action code entry, as before, displays the valid action codes available to the gamer. The sample run demonstrates the addition of two units to the UNIT file: a Blue armor company team consisting of two tank platoons, a mech platoon, and a tank company headquarters; and a reinforced Red tank battalion consisting of three tank companies, a mechanized rifle company, and a tank battalion command post. The other actions of the UNIT program are virtually identical to those of the SRC program exemplified in figure A-2. A listing of all units on the UNITFILE (action type 1) has been included in figure A-3.

```
CALL,RUNUNIT,ID=SCORES

ENTER ACTION TYPE( X FOR LIST)--          X

FOLLOWING ACTIONS CAN BE EXECUTED
R=READ(REVIEW) A RECORD
A=ADD A NEW UNIT
C=ADD SRC'S WITHIN AN EXISTING FORCE
D=DELETE A UNIT AND/OR SRC'S WITHIN THE UNIT
L=LIST ALL UNITS ON FILE
E=END THE PROGRAM
ENTER ACTION TYPE( X FOR LIST)--          A

ADD-ENTER NEW UNIT ID(END TO EXIT)--BA/1-1A

ENTER SCR(0 IF DONE)-     BTANKPLT

NEXT-  BTANKPLT

NEXT-  BMECHPLT

NEXT-  BTANKCOHQ

NEXT-  0

ADD-ENTER NEW UNIT ID(END TO EXIT)-- R5-6A

ENTER SRC (0 IF DONE)-          RTANKCO

NEXT-  RTANKCO

NEXT-  RTANKCO

NEXT-  RMECHCO

NEXT-  RTANKBNCP

NEXT-  0

ADD-ENTER NEW UNIT ID(END TO EXIT)--END
```

Figure A-3. Sample Run of UNIT Program (continued)

```
ENTER ACTION TYPE( X FOR LIST)--        L

UNIT=B3-11FA        SRC
                    BARTYBAT
                    BARTYBAT
                    BARTYBAT
UNIT=B7AVNCO        SRC
                    BAHCO
UNIT=BA/1-1A        SRC
                    BTANKPLT
                    BTANKPLT
                    BMECHPLT
                    BTANKCOHQ
UNIT=BB/1-1A        SRC
                    BTANKPLT
                    BTANKPLT
                    BMECHPLT
                    BTANKCOHQ
UNIT=BC/1-1A        SRC
                    BTANKPLT
                    BTANKPLT
                    BMECHPLT
                    BTANKCOHQ
UNIT=R1-2FA        SRC
                    RARYTBN
UNIT=R2-2FA        SRC
                    RARYTBN
UNIT=R3-2FA        SRC
                    RARYTBN
UNIT=R5-6A        SRC
                    RTANKCO
                    RTANKCO
                    RTANKCO
                    RMECHCO
                    RTANKBNCP
UNIT=R6-6A        SRC
                    RTANKCO
                    RTANKCO
                    RMECHCO
                    RMECHCO
                    RTANKBNCP
UNIT=R7-6A        SRC
                    RTANKCO
                    RTANKCO
                    RTANKCO
                    RTANKCO
                    RTANKBNCP
```

Figure A-3.   Sample Run of UNIT Program (continued)

```
ENTER ACTION TYPE( X FOR LIST)--      E

ANY MORE FORCE STRUCTURES TO BE UPDATED?
     N

ALL DONE JOB HAS ENDED
     STOP
```

Figure A-3. Sample Run of UNIT Program (concluded)

A-6. PARENT UNIT FILE CREATION. The PARENTFILE is a file on which the units defined on the UNIFILE are grouped. if desired, into higher echelon organizations. A sample run of the PARENT program is given in figure A-4. As before, the "call" command is entered to attach the UNITFILE, PARENTFILE, AND PARENT3IN (the binary compiled file of the PARENT program) and to execute the program. An "x" action type entry displays the valid action codes. The sample run demonstrates the entries of two common variations of parent unit groupings. The first parent unit entered was for 81-1A. In this example, the parent unit, a battalion, is composed of the companies: BA/1-1A, BB/1-1A, and BC/1-1A. The second example is for B7AVN, which has only one subordinate unit in it. A "1" action listing of the parent unit organizations is also provided in figure A-4. As in the UNIT program, the other valid action types are similar to those of the SRC program, and example runs may be found in figure A-2.

```
CALL,RUNPARENT, ID=SCORES
ENTER ACTION TYPE( X FOR LIST)--          X

FOLLOWING ACTIONS CAN BE EXECUTED
R=READ (REVIEW A RECORD)
A=ADD A NEW FORCE
C=ADD UNIT'S WITHIN AN EXISTING FORCE
D=DELETE A FORCE AND/OR UNITS WITHIN THE FORCE
L=LIST ALL FORCES ON FILE
E=END THE PROGRAM
ENTER ACTION TYPE( X FOR LIST)--          A

ADD-ENTER NEW FORCE ID(END TO EXIT)--B1 1A

ENTER UNIT (0 IF DONE)-   BA/1-1A

NEXT-  BB/1-1A

NEXT-  BC/1-1A

NEXT-  0

ADD-ENTER NEW FORCE ID(END TO EXIT)--B7AVN

ENTER UNIT(0 IF DONE)-    B7AVNCO

NEXT-  0

ADD-ENTER NEW FORCE ID(END TO EXIT)--END
```

Figure A-4. Sample Run of PARENT Program (continued)

```
ENTER ACTION TYPE( X FOR LIST)--            L

FORCE=B1-1A              UNIT
                        BA/1-1A
                        BB/1-1A
                        BC/1-1A

FORCE=B3-11FA           UNIT
                        B3-11FA
FORCE=B7AVN             UNIT
                        B7AVNCO
FORCE=R2FA              UNIT
                        R1-2FA
                        R2-2FA
                        R3-2FA
FORCE=R6A               UNIT
                        R5-6A
                        R6-6A
                        R7-6A
ENTER ACTION TYPE( X FOR LIST)--            E

ANY MORE FORCE STRUCTURES TO BE UPDATED?
    N

ALL DONE JOB HAS ENDED
    STOP
```

Figure A-4. Sample Run of PARENT Program (concluded)

A-7. FORCE FILE CREATION. The FORCEFILE is actually a consolidation of the information contained on the other three files in a format suitable for processing in the Jiffy Game. A sample run of the FORCE program is presented in figure A-5. The interactive "call" command, which for the FORCE program attaches five files (SRCFILE, UNITFILE, PARENTFILE, FORCEFILE, and FORCEBIN, the force program compiled binary file) and executes the program, is preceded by an attach of the Jiffy Game random access data base, which is the unclassified version for this example. The first entry in the FORCE program identifies the force into which the parent units are to be initialized. The force entry must be either "b", denoting the Blue force, or "r" denoting the Red force. After the force type specification, the valid actions are displayed with an "x" action entry. Next, since a "b" was entered for force type, all parent units entered are for Blue. Following the entry of each parent unit, the user assigns a unit effectiveness, a combat intensity level, and an EW type to every subordinate unit within the designated parent. Normally the unit effectiveness entry is 100; however, if a game is being started with the assumption that some previous attrition has taken place, then the unit effectiveness may be less. The EW types are given in Figure B-5. This procedure initializes the units onto the FORCEFILE. Note that during this process, the computer displayed some extraneous information in the sample run after the relative (unit) effectiveness specifications for 8C/1-1A and 8S-11FA. This information is displayed each time one of the indexed-sequential files is automatically extended by the computer's operating system. After the initialization of the Blue force onto the FORCEFILE, a "1" option is entered to display all the units and parent units with their associated weapon systems. As shown in the display in figure A-5, all the units are in sector 0 of an undefined critical incident. These game variables are set during the actual processing of the Jiffy Game. The "1" action automatically ends the Blue (or Red) session of the FORCE program and returns it to the point in the program that defines the type force; otherwise, the session is ended with the "e" action. The Red session is initiated with an "r" force specification. The Red units are defined and listed the same as the Blue forces. The FORCE program is terminated through the specification of an "e" action.

```
ATTACH,CLDATA,UNDATA,ID=SCORES

CALL, RUNFORCE,ID=SCORES

IDENTIFY TYPE FORCE--  B

ENTER ACTION TYPE ( X FOR LIST)-                X

FOLLOWING ACTIONS MAY BE EXECUTED
A= ADD NEW FORCES
C= CHANGE A UNIT'S EFFECTIVENESS, CIL, OR UNIT TYPE
D= DELETE A FORCE(PARENT UNIT)
R= READ (REVIEW) PARENTS
L= LIST ALL PARENTS
E= END THE PROGRAM

ENTER ACTION TYPE ( X FOR LIST)-                A

ENTER MAJOR FORCE (0 IF DONE)-          B1-1A

ENTER REL EFF,CBT INTENSITY LVL, AND UNIT TYPE OF BA/1-1A        100,4,4

ENTER REL EFF,CBT INTENSITY LVL, AND UNIT TYPE OF BA/1-1A        100,4,4

ENTER REL EFF,CBT INTENSITY LVL, AND UNIT TYPE OF BA/1-1A        100,4,4

NEXT-                                   B3-11FA

ENTER REL EFF,CBT INTENSITY LVL, AND UNIT TYPE OF B3-11FA        100,1,3

NEXT-                                   B7 AVN

ENTER REL EFF,CBT INTENSITY LVL, AND UNIT TYPE OF B7AVNCO        100,1,2

NEXT-0

ENTER ACTION TYPE ( X FOR LIST)-                L

   FORCE= B
FORCE ID= B1-1A
   UNIT ID:  BA/1-1A  ;    LAST CI;          ::::::::::;   SECTOR: 0.
                          WPN
               ID             QTY
                2              79.
                3              30.
               11              10.
               16              12.
               25               5.
               26               3.
```

Figure A-5. Sample Run of FORCE Program (continued next page)

A-14

```
EFFECTIVENESS OF BA/1-1A = 100.
   UNIT ID:  BB/1-1A    ;   LAST CI: ::::::::::::;   SECTOR:  0.
                             WPN
                 ID         QTY
                    2           79.
                    3           30.
                   11           10.
                   16           12.
                   25            5.
                   26            3.
EFFECTIVENESS OF BB/1-1A  = 100.
   UNIT ID:  BC/1-1A    ;   LAST CI: ::::::::::::;   SECTOR:  0.
                             WPN
                 ID         QTY
                    2           79.
                    3           30.
                   11           10.
                   16           12.
                   25            5.
                   26            3.
EFFECTIVENESS OF BC/1-1A  = 100.
   AVERAGE EFFECTIVENESS OF B1-1A     = 100.

FORCE ID= B3-11FA
   UNIT ID:  B3-11FA    ;   LAST CI: ::::::::::::;   SECTOR:  0.
                             WPN
                 ID         QTY
                    2          180.
                   50           18.
EFFECTIVENESS OF B3-11FA  = 100.
   AVERAGE EFFECTIVENESS OF B3-11FA  = 100.

FORCE ID= B7AVN
   UNIT ID:  B7AVNCO    ;   LAST CI: ::::::::::::;   SECTOR:  0.
                             WPN
                 ID         QTY
                    2           40.
                   62           15.
                   63            5.
EFFECTIVENESS OF B7ANVCO  = 90.
   AVERAGE EFFECTIVENESS OF B7ANVCO  = 90.

IDENTIFY TYPE FORCE--        R

   ENTER ACTION TYPE( X FOR LIST)--        A

ENTER MAJOR FORCES (0 IF DONE) -    R2FA
```

Figure A-5. Sample Run of FORCE Program (continued)

```
ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R1-2FA        100,1,3

ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R2-1FA        100,1,3

ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R3-2FA        100,1,3

NEXT-                                              R6A

ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R5-6A        100,4,4

ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R6-6A        100,4,4

ENTER REL EFF, CBT INTENSITY LVL, AND UNIT TYPE OF R7-6A        100,4,4

NEXT-                                               0

ENTER ACTION TYPE( X FOR LIST)--              L
  TYPE FORCE= R
  FORCE ID= R2FA
    UNIT ID:  R1-2FA   ;   LAST CI: ::::::::::::;   SECTOR:  0.
                        WPN
              ID        QTY
                         1         21.
                         2        211.
                        25          3.
                        48         17.
EFFECTIVENESS OF R1-2FA     = 95.
    UNIT ID:  R2-2FA   ;   LAST CI: ::::::::::;   SECTOR:  0.
                        WPN
              ID        QTY
                         1         20.
                         2        202.
                        25          3.
                        48         16.
EFFECTIVENESS OF R2-2FA     = 91.
    UNIT ID:  R3-2FA   ;   LAST CI: ::::::::::;   SECTOR:  0.
                        WPN
              ID        QTY
                         1         21.
                         2        215.
                        25          3.
                        48         17.
EFFECTIVENESS OF R3-2FA     = 97.
    AVERAGE EFFECTIVENESS OF R2FA        = 94.
```

Figure A-5. Sample Run of FORCE Program (continued)

```
FORCE ID= R6A
    UNIT ID:  R5-6FA   ;   LAST CI: ::::::::::;  SECTOR:  0.
                       WPN
              ID            QTY
                       1          9.
                       2        105.
                       3         60.
                      17         23.
                      21          8.
                      25          2.
                      26          2.
                      31          2.
                      37          8.
EFFECTIVENESS OF R5-6A    =  75.
    UNIT ID:  R6-6A    ;   LAST CI: ::::::::::;  SECTOR:  0.
                       WPN
              ID            QTY
                       1         10.
                       2        105.
                       3        128.
                      17         17.
                      21         16.
                      25          2.
                      26          2.
                      31          2.
                      37         16.
EFFECTIVENESS OF R6-6A    =  80.
    UNIT ID:  R7-6A    .;   LAST CI: ::::::::::;  SECTOR:  0.
                       WPN
              ID            QTY
                       1         11.
                       2        136.
                      17         37.
                      25          1.
                      26          3.
                      31          4.
EFFECTIVENESS OF R7-6A    =  90.
AVERAGE EFFECTIVENESS OF R6A       =  82.

IDENTIFY TYPE FORCE--    8

ENTER ACTION TYPE( X FOR LIST)--       E

 ACTION COMPLETE
 DO YOU WANT TO END THE PROGRAM

ALL DONE***JOB HAS ENDED
    STOP
```

Figure A-5. Sample Run of FORCE Program (concluded)

APPENDIX B

SAMPLE RUN OF THE JIFFY GAME

APPENDIX B

SAMPLE RUN OF THE JIFFY GAME

B-1. PURPOSE AND SCOPE. The purpose of this appendix is to provide the user a step by step procedure for playing the interactive Jiffy Game.

B-2. GENERAL. The computer performs, basically, two major tasks in the "Jiffy" war gaming process. First, it is used for bookkeeping in the sense that it keeps track of the units being gamed and updates their status for attrition suffered in combat and other changes to their status, which may be entered manually. Second, the computer is used to perform the attrition calculations and keep a record of vital combat statistics.

B-3. INITIATION OF THE GAME. After all the units to be entered into combat have been initialized on the FORCEFILE (see appendix A), and an empty history file (HISTORYFILE) has been created, the user is ready to begin processing the Jiffy Game. Figure B-1 contains a call file pair. The first attaches and processes the proper files to execute the game. The second call file preserves the user's answers in forms convenient for regaming. Before the "call" file is entered by the user, however, the data file (CLDATA) must be attached. Figure B-2 contains an example of this process and the initial user responses necessary to process the game. In figure B-2, the user is asked to specify the purpose of the run. The entry of 999 reveals that this user response selects the mode (interactive, batch, or interactive answer file making) under which the game is to be run. Generally a "4" is entered here. Next the program come to the decision point. The entry of 999 displays all the alternative courses of action available to the user at this point as depicted in figure B-2.

```
CONNECT,INPUT,TAPE50.
REQUEST,STATS,*PF.
AUDIT,ID=SCORES,AI=S,LF=STATS,PF=E3DATA.
ATTACH,JIFFY,E3BINSEG,ID=SCORES,MR=1.
ATTACH,TAPE9,SRCFILE,ID=SCORES.
ATTACH,TAPE55,FORCEFILE,ID=SCORES.
ATTACH,TAPE8,HISTORYFILE,ID=SCORES.
ATTACH,SEG,SEGMENT,ID=XJIFFYM,MR=1.
ATTACH,REVIEW,ID=SCORES.
SEGLOAD,I=SEG.
JIFFY.
CALL,ANS,ID=XJIFFYM.


ATTACH,OLD,RANSWER,ID=EURIII.
COPYCF,OLD,RANSWER,999.
BKSP,RANSWER.
REWIND,ANSWER.
COPYCF,ANSWER,RANSWER.
CATALOG,RANSWER,RANSWER,ID=EURIII,MR=1.
PURGE,PI,RANSWER,ID=EURIII,LC=1.
CATALOG,QA,RREVIEW,ID=EURIII.
PURGE,PREV,RREVIEW,ID=EURIII,LC=1.
```

Figure 8-1.   Call Files to Run the Main Jiffy Program.

```
CALL,DOGAME,ID=XJIFFYM


                             CACDA JIFFY WAR GAME

SPECIFY PURPOSE OF THIS RUN999

   ENTER 1 = TO CREATE INPUT FILE OF ANSWERS FOR BATCH JOB
   ENTER 2 = TO GET OUTPUT OF RESULTS INTERACTIVELY
   ENTER 4 = TO GET TERMINAL OUTPUT AND MAKE ANSWER FILE
             SPECIFY PURPOSE OF THIS RUN--4



   ??? D E C I S I O N   P O I N T ???999

   ENTER 1 TO LOAD FORCES INTO A SECTOR
         2 TO CALCULATE RATE-OF-ADVANCE
         3 TO ASSESS COMBAT
         4 TO APPORTION CBT LOSSES TO UNITS
         5 TO DISPLAY BATTLE STATISTICS
         6 TO DISPLAY WEAPON ARRAYS
         7 TO ADD SRC'S TO TOE FILE
         8 TO RESTART AT A PREVIOUSLY GAMED CI
         9 TO END GAME AND/OR UPDATE HISTORY FILE
        10 TO RESET ELEMENT ARRAY FROM INPUT FILE
        12 TO RESET TERMINAL OUTPUT FILE
```

(Decision point 11 was "to review previous run." This can now be done at any interactive point by entering "9998". See 4e(2) for further discussion.)

Figure 8-2. Initiation of Sample Jiffy Game Run.

B-4. FORCEFILE MANIPULATION. The units involved in the combat to be gamed must be loaded into their respective sectors before any Jiffy Game assessments can be processed. The units on the FORCEFILE are loaded into sectors by the procedures available to the user through DECISION POINT 1. Figure B-3 contains examples of these file manipulation options. After entering a "1" at the DECISION POINT, the user is asked to input the critical incident mnemonic identifier (1 to 10 alphanumeric characters) and the sector number to be gamed. In the example, these are entered as "TEST" and "1" respectively. As seen in figure B-3 a 999 entered at OPTION displays the force file manipulation options available to the user.

a. An example of the option that enables the user to create units during the game is also included in the sample run. The create option, OPTION 3, provides two ways of creating units. First, the user is allowed to use SRCs, which exist on the SRCFILE, to define the subunit organizations of the unit being created. An example of this procedure has not been included in the sample run, because it is similar to the procedures presented in appendix A. Second, the user is allowed to create a unit through the specification of the types and quantities of weapon systems contained in the unit. An example of this type of create is included in figure B-3.

b. Option 1 allows the user to load units into the current sector during the game. In figure B-3 the unit test created is entered into the current sector.

c. An example of the display option is next given. Units 11 and 12 are displayed.

d. Next an example of option 8 is shown. Units 11 and 12 are combined. After this the display option is used to look at the new unit 11.

e. An example of OPTION 2, the remove option, is presented. This option allows the user to remove a unit from a sector into which it was loaded. When a unit is removed from a sector, it is loaded into sector 0 of the specific critical incident.

f. An example of OPTION 4, the option that provides the user the capability to adjust (add or subtract) weapons systems in a unit, is also presented, which changes the quantity of weapon type 2 in unit B A/1-23A.

g. The options of DECISION POINT 1 are always concluded with the specification of OPTION 0. This option fills the weapon system arrays, which are used in the Jiffy Game assessment routines, with the weapons of the units that have been loaded into the sector and critical incident being gamed.

```
??? D E C I S I O N   P O I N T  ???
1
ENTER CI MNEMONIC -
TEST
ENTER SECTOR NUMBER -
1
SECTOR 1. WAS PREVIOUSLY GAMED.
IS THIS SECTOR BEING REGAMED NOW?
Y
ALL STATS RECORDS FOR SECTOR          1.  CF CI TEST          HAVE BEEN
ZEROED OUT ON HISTORYFILE.
??? O P T I O N ???
999
ENTER 0 TO PROCEDE WITH ASSESSEMENTS
      1 TO LOAD UNITS INTO SECTOR
      2 TO REMOVE UNITS FROM SECTOR
      3 TO CREATE A NEW UNIT
      4 TO ADJUST WPNS IN A UNIT
      5 TO ATTACH A UNIT TO A NEW PARENT
      6 TO DISPLAY A UNIT
      7 TO DELETE A UNIT FROM FORCE FILE
      8 TO COMBINE UNITS

??? O P T I O N ???
3
ARE THERE ANY BLUE UNITS TO CREATE?
Y
ENTER PARENT UNIT ID -
1
ENTER UNIT ID -
11
CREATE BY SRC'S?
N
ENTER WPN ID,QTY--0,0 WHEN DONE
32,10
NEXT-
36,10
NEXT-
39,10
NEXT-
0,0
ENTER RELATIVE EFFECTIVENESS-
100
CREATE ANOTHER UNIT FOR THIS FORCE?
N
```

Figure 8-3. FORCEFILE Manipulation (continued).

```
??? O P T I O N ???
1
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR-
1
ENTER UNIT ID (OR ALL)-
ALL
LOAD ANOTHER UNIT?
N


??? O P T I O N ???6
ENTER TYPE OF DISPLAY -999
ENTER 1 TO DISPLAY ALL PARENT UNITS IN FORCEFILE
      2  TO DISPLAY ALL PARENT UNITS IN SECTOR
      3  TO DISPLAY UNITS IN A SPECIFIC PARENT
      4  TO DISPLAY WEAPONS IN A UNIT
ENTER TYPE OF DISPLAY -4
ENTER PARENT OF UNIT(S) TO BE DISPLAYED -1
ENTER UNIT ID (OR ALL) -11


1                EFF=100.
------------------------------------------------------------------------
11               EFF=100.
........................................................................
ITEM CODE        32    36    39
# REMAIN         10.0  10.0  10.0
# LOST            0.0   .0.0  0.0
........................................................................
ANOTHER DISPLAY?       Y
ENTER TYPE OF DISPLAY -4
ENTER PARENT OF UNITS(S) TO BE DISPLAYED -1
ENTER UNIT ID (OR ALL) -12


1                EFF=100.
------------------------------------------------------------------------
12               EFF=100.
........................................................................
ITEM CODE        61    62
# REMAIN         10.0  10.0
# LOST            0.0   0.0
........................................................................
ANOTHER DISPLAY?       N
??? O P T I O N ???8
PARENT ID OF HOST = 1
         UNIT ID = 11
PARENT ID OF DISBANDING UNIT = 1
                 UNIT ID = 12
```

Figure B-3.   FORCEFILE Manipulation (continued)

```
??? O P T I O N ???6
ENTER TYPE OF DISPLAY -4
ENTER PARENT OF UNIT(S) TO BE DISPLAYED -1
ENTER UNIT ID (OR ALL) -11

 1              EFF=272
-------------------------------------------------------------------------

 11             EFF=272
.........................................................................
ITEM CODE       32      36      39   61    62
# REMAIN        10.0    10.0    10.0 10.0  10.0
# LOST          0.0     0.0     0.0  0.0   0.0
.........................................................................
ANOTHER DISPLAY?N

??? O P T I O N ??? 2
    PARENT OF UNIT(S) TO BE REMOVED-                             B1-1A
ENTER UNIT ID (OR ALL)-    BC/1-1A
REMOVE ANOTHER UNIT?       N

??? O P T I O N ???         4
ENTER PARENT OF UNIT TO BE ADJUSTED -BA/1-23A
ENTER UNIT ID- BA/1-23A
ENTER WPN ID,NEW QTY--0,0 WHEN DONE 2,23

(The "New Qty", 23, is an incremental value, that is, 23 items coded 2
have been added to whatever is there.  It can also be negative.)

NEXT- 0,0
ANY MORE UNITS TO CHANGE?        N
```

Figure B-3. FORCEFILE Manipulation (continued)

```
??? O P T I O N ???        0

          DO YOU WISH TO SEE UNITS LOADED INTO SECTOR?
          Y
          UNITS LOADED INTO SECTOR          1. FOR CI TEST

          FORCE.     PARENT     UNIT     TYPE     CIL     EFF
            1          1         11        1       5       100
            1          1         12        2       5       100
            1          1         13        3       5       100
            1          1         14        4       5       100
            2          2         21        1       5       100
            2          2         22        2       5       100
            2          2         23        3       5       100
            2          2         24        4       5       100
```

Figure B-3.   FORCEFILE Manipulation (concluded).

B-5. RATE OF ADVANCE. After all units for each force have been loaded into a sector, the rate of advance and, subsequently, the combat assessments for that sector can be processed. It should be noted here that neither rate of advance nor combat assessments need be done immediately after the units have been loaded in a sector. Most users of the Jiffy Game to date have found that it is more efficient to load the units into all sectors for a particular critical incident (CI) prior to running any rate of advance or assessment routines.

a. The example given in figure B-3 demonstrated the loading of units into sector 1 of a CI identified as TEST. The weapon system array created by selecting OPTION 0 (zero) is displayed by entering a "6" at DECISION POINT as shown in figure B-4. This array is used in the rate of advance calculations; the FORCEFILE itself is not operated on during this portion of the Jiffy Game.

b. Figure B-5 is a sample run of the rate of advance routine, which is initiated by entering a "2" at DECISION POINT. Where appropriate, a 999 has been entered to display the input options available to the user. The responses given in this example are not intended to portray realistically any particular battlefield situation but have been selected in such a way that all possibile inputs that might be required are shown. Input of an attacker posture, for example, is not asked for whenever a "1" (meeting engagement), a "2" (delay), or a "3" (withdraw) is entered for the type of engagement. Some inputs in rate of advance set parameters that determine input requirements or limitations in the combat assessment portion of the game. The minefield employment response given in this routine, for instance, determines whether or not minefield assessments can be made. The inputs made in this routine serve primarily to represent the environmental and military conditions of the battlefield. The meaning and significance of these parameters to the Jiffy Game methodology are documented in the Jiffy Game Technical Manual (reference 2). Not demonstrated in the sample run is the result of entering the rate of advance routine when the defending force has no weapons in the array. Should this occur, an error message is displayed just after the Blue air threat input is made, and the program returns immediately to the DECISION POINT during an interactive run. (In a batch processing mode, execution of the program is terminated.)

```
??? D E C I S I O N   P O I N T ???
6
              FORCE STRUCTURES

ELEMENT        BLUE        RED
   1           100.       100.
   2           100.       100.
   3           100.       100.
   5           100.       100.
   6           100.       100.
  11            10.        10.
  13            10.        10.
  16            10.        10.
  21            10.        10.
  29            10.        10.
  31             0.        10.
  32            10.         0.
  36            10.         0.
  37             0.        10.
  39            10.        10.
  43            10.        10.
  46            10.        10.
  50            10.        10.
  61            10.         0.
  62            10.        10.
  63             0.        10.
```

Figure B-4. Initial Weapon System Array for Sample Runs.

```
??? D E C I S I O N   P O I N T ???
2
IS BLUE ATTACKING RED?
N
ENTER TYPE OF ENGAGEMENT
999
    FOR MEETING ENGAGEMENT.................ENTER 1
        DELAY...............................ENTER 2
        WITHDRAW............................ENTER 3
        DEFEND FORTIFIED POSITION..........ENTER 4
        DEFEND PREPARED POSITION...........ENTER 5
        DEFEND HASTY POSITION..............ENTER 6
ENTER TYPE OF ENGAGEMENT
5
ENTER ATTACKER POSTURE
999
    FOR FRONTAL ATTACK...............ENTER 1
        SINGLE ENVELOPMENT...........ENTER 2
        DOUBLE ENVELOPMENT...........ENTER 3
ENTER ATTACKER POSTURE
2
ENTER THE BLUE FIREPOWER SCORE (0 OR MORE) FOR TACAIR
0
ENTER THE RED FIREPOWER SCORE (0 OR MORE) FOR TACAIR
0
PLAY EW?
Y
ENTER EW SEED-
TOMATO
ENTER THE # OF RED EW MISSIONS REQUESTED (MAX=50)
20
CHANGE EW PRIORITY?
Y
  THE PRESENT ORDER OF PRIORITY IS:

    1  AIR DEFENSE ARTILLERY
    2  ATTACK HELICOPTERS
    3  ARTILLERY UNITS
    4  MANEUVER UNITS
  ENTER THE 4 ITEM NUMBERS FROM HIGH TO LOW PRIORITY
3,1,2,4
  CHANCE ROLL WAS 6
  CHANCE ROLL WAS 5
  CHANCE ROLL WAS 3
  CHANCE ROLL WAS 5
```

Figure B-5. Rate of Advance (continued)

```
PERCENT BLUEADA  FP SCORE DEGRADED-  .99
PERCENT BLUEAH   FP SCORE DEGRADED-  .10
PERCENT BLUEARTY FPS & MISSIONS DEGRADED-   .60
PERCENT BLUEMNR  FP SCORE DEGRADED-  .10
ENTER THE # OF BLUE EW MISSIONS REQUESTED (MAX=50)
20
CHANGE EW PRIORITY?
N
  CHANCE ROLL WAS 3
  CHANCE ROLL WAS 5
  CHANCE ROLL WAS 6
PERCENT REDADA  FP SCORE DEGRADED-  .60
PERCENT REDAH   FP SCORE DEGRADED-  .10
PERCENT REDARTY FPS & MISSIONS DEGRADED-   .60
PERCENT REDMNV  FP SCORE DEGRADED-  0.00

IS BLUE EMPLOYING SMOKE?
Y
ENTER PERCENT (DECIMAL) OF RED SMOKED
.2
ENTER PERCENT (DECIMAL) OF SELF SMOKED
.8
IS RED EMPLOYING SMOKE?
Y
ENTER PERCENT (DECIMAL) OF BLUE SMOKED
.2
ENTER PERCENT (DECIMAL) OF SELF SMOKED
0
ENTER TYPE OF RED SMOKE-
999
ENTER 1 for WP OR IF ONLY SELF OBSCURING SMOKE IS EMPLOYED, ENTER 2 FOR
  OTHER TYPE SMOKE.
ENTER TYPE OF RED SMOKE-
1
ENTER TERRAIN TYPE
999
            FOR OPEN TERRAIN.................ENTER 1
                 ROLLING TERRAIN..............ENTER 2
                 HILLY TERRAIN................ENTER 3
                 MOUNTAINOUS TERRAIN..........ENTER 4
ENTER TERRAIN TYPE
2
```

Figure B-5. Rate of Advance (continued)

```
ENTER VISIBILITY FACTOR
1
IS THIS A DAY BATTLE?
Y
WILL NEW ARMOR BE FULLY USED?
Y
IS ATTACKER MOUNTED
Y
ENTER FRACTION OF SECTOR ATTACKER MASSED (MAX=1)
.5
ENTER HOLDING FIREPOWER RATIO- O  MIN  = 2
.6
ARE MINES EMPLOYED IN THIS SECTOR
Y


SHOULD TIME OR DISTANCE BE HELD CONSTANT
999
            FOR CONSTANT TIME......ENTER 1
               CONSTANT DISTANCE..ENTER 2
SHOULD TIME OR DISTANCE BE HELD CONSTANT
1
ENTER ATTACK TIME IN HOURS (MAX 24)
6
```

RATE OF ADVANCE

MANEUVER FP SCORE	11133./	9573.
FIRE SUPPORT FP SCORE	3104./	2529.
TOTAL FP SCORE	14237./	12102.
FP RATIO IN SECTOR'S MAIN ATTACK AREA	1.8	
TOTAL FP RATIO	1.2	
MANEUVER FP RATIO	1.2	
FIRE SUPPORT FP RATIO	1.2	
RATE-OF-ADVANCE (KPH)	.62	
DURATION OF ATTACK (HR)	6.0	
DISTANCE ADVANCED (KM)	3.7	

Figure B-5. Rate of Advance (concluded).

B-6. COMBAT ASSESSMENTS. Following a successful run of the rate of advance routine, the combat assessments can be initiated by entering a "3" at the DECISION POINT. Losses can be determined for six different types of combat in the Jiffy Game. These combat types, in the order processed, are: 1) TACAIR, 2) indirect fire, 3) mines, 4) armor/antiarmor, 5) infantry, and 6) attack helicopter/air defense. As in the rate of advance calculations, all combat losses assessments are based on the weapon system array displayed in figure B-3. A sample run of each combat assessment is presented and discussed in the following subparagraphs.

    a. <u>TACAIR</u>. When a "3" is input for the DECISION POINT, the first combat losses to be addressed are TACAIR. The Jiffy Game does not make the actual attrition calculations for TACAIR combat; a model called TACCOM/TALON (see reference 1 and 2), developed and run by the US Air Force, is used to determine TACAIR combat losses. The Jiffy Game simply accepts as direct input the cumulative losses, by weapon type, output from the TACCOM model as illustrated in figure B-6. The net result of this sample run is the loss (subtraction) of one weapon type 21 from the Blue force. When all TACAIR losses have been entered, the program proceeds to a subsequent combat assessment routine with no intervening DECISION POINT.

```
??? D E C I S I O N   P O I N T ???
3
DO YOU WISH TO INCLUDE ANY LOSSES DUE TO TACAIR FOR APPORTIONMENT?
Y
ANY BLUE LOSSES?
Y
ENTER WPN ID,# LOST (0,0 WHEN DONE)--
21,1
NEXT--
0,0
ANY RED LOSSES?
N
```

Figure B-6. TACAIR Losses.

b. Indirect Fire. After the TACAIR losses, if any, have been entered, the program proceeds to checking the weapon system array for indirect fire weapons. If none are found, the program proceeds to a subsequent assessment; should either force contain any indirect fire weapons, the indirect fire combat assessment routine is entered. A sample run of this routine is given in figure B-7. As with all combat assessment, the first input determines whether or not the type of combat being considered is to be processed. In the example of figure B-7, the indirect fire assessments are to be processed and the program proceeds to request inputs needed to calculate losses. Again, all possible inputs have been illustrated in this example although some might not be asked for at times. For example, if the response to "ENTER # MINUTES OF PREP FIRE (0-60)" is "0" (zero), the next entry specifying minutes of counterprep fire, would not be asked. Also, the question "WILL ATTACKER DISMOUNT INFANTRY DURING THIS CI?" is omitted whenever it is specified in the rate of advance routine that the attacker's infantry forces are not mounted (see figure B-4). Finally, the entry of the number of CLGP missions to fire is only required when the Blue weapon system array contains the appropriate indirect fire weapons. There are only two indirect fire weapons capable of firing CLGP missions; in this example, one of these sytems was included in the Blue force array. If both were in the weapon array, two separate inputs would have been required. Before the display of assessments the program prints whether artillery caused no, light, or heavy dust effects. After all the different type assessments have been displayed, the user must indicate whether the losses, as displayed, should be subtracted from the force. This option, which is presented at the end of each assessment routine, allows the user to disregard a "bad" run (e.g., an incorrect input may have been entered), and the routine can then be processed again at a later time.

DO YOU WISH TO PROCESS INDIRECT FIRE ASSESSMENTS?
Y

                  INDIRECT FIRE ASSESSMENTS

ENTER PERCENT (DECIMAL) 122 SP HOWITZERS USED IN DF ROLE
.2
IS BLUE EMPLOYING SMOKE?
Y
ENTER PERCENT MISSIONS DEGRAD OF BLUE SMOKE EMPLOYERS
.2
IS RED EMPLOYING SMOKE?
Y
ENTER PERCENT MISSIONS DEGRAD OF RED SMOKE EMPLOYERS
.2
ENTER 3 BLUE ARTY FIRING LEVELS (CBT SPT,AD SUP, CTR-BTRY) _
999
INCORRECT ENTRY - TRY AGAIN
ENTER 0 FOR NO FIRES
       1 FOR LIGHT INTERMITTENT FIRES
       2 FOR FIRES BASED ON 2/3 BASIC LOAD
       3 FOR FIRES BASED ON TOTAL BASIC LOAD
       4 FOR FIRES BASED ON DAILY RESUPPLY RATE
       5 FOR FIRES BASED ON DAILY RESUPPLY RATE PLUS THE BASIC LOAD
       6 FOR APPROX. SUSTAINED RATE OF FIRE
ENTER 3 BLUE ARTY FIRING LEVELS (CBT SPT, AD SUP, CTR-BTRY) -
4,4,4
ENTER 3 RED ARTY MULTIPLIERS (CBT SPT, AD SUP, CTR-BTRY) -
.2,.2,.2
ENTER # HOURS OF ARTY SUPPORT (0-6.)
6
ENTER # MINUTES OF PREP FIRE (0-60)
10
ENTER # MINUTES OF COUNTER-PREP FIRES (0-60)
10
ENTER # MINUTES OF FINAL PROTECTIVE FIRE (0-60)
0
WILL ATTACKER DISMOUNT INFANTRY DURING THIS CI?
Y

Figure 8-7. Sample Run of Indirect Fire Assessments (continued next page).

```
IS AN AERIAL DESIGNATOR IN USE?
Y
ENTER # CLGP MISSIONS TO FIRE (MAX-23) -
10
ENTER CLOUD HEIGHT - (0-5)
999
ENTER 0 IF RANGE IS LESS THAN 1500 FT
ENTER 1 IF RANGE IS 1500-1999 FT
ENTER 2 IF RANGE IS 2000-2499 FT
ENTER 3 IF RANGE IS 2500-2999 FT
ENTER 4 IF RANGE IS 3000-4499 FT
ENTER 5 IF RANGE IS 4500 FT OR MORE
ENTER CLOUD HEIGHT- (0-5)
2
LIGHT DUST EFFECTS
```

INDIRECT FIRE ASSESSMENTS

RED LOSSES TO BLUE			BLUE LOSSES TO RED		
ITEM	#LOST	CREW	ITEM	#LOST	CREW
1	.9		1	.4	
2	46.6		2	16.6	
3	7.0		3	.5	
6	7.0		6	.5	
13	3.9	7.8	13	.4	.8
16	.2	.6	21	.1	.2
21	.8	1.6	29	.2	.4
25	.2	.4	32	.1	.3
29	.5	1.5	31	.5	2.0
36	.1	.2	43	3.3	13.2
37	1.7	1.7	46	.1	.5
39	.4	3.2	50	.1	1.0
43	4.6	23.0			
46	.4	0.0			
50	.6	4.8			

```
DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

Y
```

Figure 8-7. Sample Run of Indirect Fire Assessments (concluded).

c. _Mines_. Following the indirect fire assessment, the program checks whether mines are employed in the CI being gamed as specified in rate of advance (see figure B-5). If so, the minefield assessment routine is entered for processing. A sample run of this routine is given in figure B-8. Inputs for both a conventional and a FASCAM minefield assessment are demonstrated. For the conventional case, the example specifies that the Blue force does have the capability to employ mechanical mine planters. If mechanical planters are not used, the entries for the number of platoons and for the number of hours are not made. In their place, three different inputs are required for the following: 1) "ENTER NUMBER OF MEN USED TO EMPLACE MINES (MAX=1000)", 2) "ENTER HOURS AVAILABLE FOR EMPLACEMENT OF MINES (MAX=300)", and 3) "SELECT MINEFIELD DENSITY". For minefield density, a selection is made from five different specified values, which range from .0013 to.0200 mines/sq meter. For the FASCAM assessment, the input requirements are always as shown in the sample run regardless of the type delivery specified. The method of delivery entered for FASCAM causes the program to access the correct data (e.g.., casualty rates) in making the loss calculations. It should be noted that only the defending force can emplace minefields. In this example, the Blue force has been designated as the defender in rate of advance (see figure B-4); therefore, the attacker losses displayed in figure B-8 are to the Red force. Another point to emphasize is that the minefield routine is not exited until a "0" (zero) is entered for "SELECT TYPE OF MINE EMPLOYMENT".

```
DO YOU WISH TO PROCESS MINE ASSESSMENTS?
Y
SELECT TYPE OF MINE EMPLOYMENT
999
FOR CONVENTIONAL MINES..............ENTER 1
    FASCAM MINES....................ENTER 2
    ***TO END***...................ENTER 0
SELECT TYPE OF MINE EMPLOYMENT
1
ARE MINES LAID PRIOR TO COMMENCEMENT OF HOSTILITIES?
Y
WILL BLUE HAVE THE CAPABILITY TO EMPLOY MECHANICAL MINE PLANTERS?
Y
ENTER NUMBER OF MECHANICAL MINE PLANTER PLATOONS (MAX 30)
3
ENTER NUMBR OF AVAILABLE MINE PLANTER HOURS (MAX 300)
24
POTENTIAL MINEFIELD FRONTAGE IS  21600.

ENTER ACTUAL MF FRONTAGE (MAX=POTENTIAL)
1500
ENTER FRACTION OF MINE FIELD NOT BYPASSED BY ATTACKER (MAX=1.0)
.6
ENTER AMOUNT OF TRAFFICABLE TERRAIN (    900.-100000. M)
7000
ENTER AP MINE DENSITY (SQ METER) - (MIN=.013-MAX=.160)
.1
ENTER PERCENT (DECIMAL) OF FORCES ENTERING MF (MAX=.5)
.25
```

MINEFIELD ASSESSMENTS

ATTACKER LOSSES

ITEM	#LOST	CREW
2	1.2	
3	.6	
6	.6	
16	.1	.3
21	.1	.2
29	.1	.3
31	.1	.4

Figure 8-8. Sample Run of Minefield Assessments (continued next page).

```
SELECT TYPE OF MINE EMPLOYMENT
2
SELECT TYPE OF FASCAM DELIVERY
999
FOR ARTILLERY...................ENTER 1
    GEMMS.......................ENTER 2
SELECT TYPE OF FASCAM DELIVERY
2
ENTER MINEFIELD FRONTAGE (MAX= 100000)
1500
ENTER FRACTION OF MF NOT BYPASSED BY ATTACKER (MAX=1.)
.6
ENTER AMOUNT OF TRAFFICABLE TERRAIN (    900.-100000. M)
7000
ENTER PERCENT (DECIMAL) OF FORCE ENTERING MF (MAX=.5)
.25

      FASCAM ASSESSMENTS

        ATTACKER LOSSES
      ITEM   #LOST    CREW

        2     1.2
        3      .6
        6      .6
       16      .1       .3
       21      .1       .2
       29      .1       .3
       31      .1       .4

SELECT TYPE OF MINE EMPLOYMENT
0
DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

Y
```

Figure 8-8. Sample Run of Minefield Assessments (concluded).

d. Armor/Antiarmor. Following the minefield assessment, if either force contains tanks (armor) or antitank weapon systems, the armor/antiarmor assessment routine is entered. As shown in figure B-9, this routine requires minimal inputs from the user. The primary requirements are to enter a range index between attacker and defender, the percent of armor/antiarmor committed and the percents of weapons obscured by smoke at this range. Multiple assessments can be made by entering another non-zero range index each time the program returns to that input point; assessments are not stopped until a "0" is entered for the range index. The 999 input in figure B-9 shows that one of six different specified range bands can be entered for the range index (excluding zero). The maximum range between attacker and defender (3,000 + meters) corresponds to the greatest distance at which the opposing forces would engage in direct fire combat under ideal conditions of visibility. The visibility level for the combat assessments is specified by the user in the rate of advance and has been set to 100 percent for this sample run (see figure B-5). Under less than ideal visibility conditions the maximum range for armor/antiarmor engagement is decreased. For instance, under the poorest visibility conditions allowed, a "1" (500 meters) is the only non-zero input accepted.

```
DO YOU WISH TO PROCESS ARMOR/ANTIARMOR ASSESSMENTS?
Y
DOES THE M60A3 HAVE THERMAL SIGHTS?
Y
ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER
999
             IF RANGE IS BETWEEN:
                3000 & 2501 ENTER 6
                2500 & 2001 ENTER 5
                2000 & 1501 ENTER 4
                1500 & 1001 ENTER 3
                1000 &  501 ENTER 2
                 500 &    0 ENTER 1
                **TO STOP** ENTER 0
ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER
1
ENTER PERCENT OF BLUE/ARMOR/ANTIARMOR COMMITTED
.9
ENTER PERCENT OF RED ARMOR/ANTIARMOR COMMITTED
.9
IS BLUE EMPLOYING SMOKE?
Y
ENTER PERCENT (DECIMAL) RED WEAPONS OBSCURED
.2
ENTER PERCENT (DECIMAL) OF SELF SMOKED
.1
IS RED EMPLOYING SMOKE?
Y
ENTER PERCENT (DECIMAL) BLUE WEAPONS OBSCURED
.2
ENTER PERCENT (DECIMAL) OF SELF SMOKED
.1
    BLUE LOSSES TO THIS POINT
          ITEM        # LOST
           2           14.3
           3            3.4
          11             .1
          13            1.1
          16            2.2
          21            1.8
          29            1.8
          32             .9
```

Figure 8-9. Sample Run of Armor/Antiarmor assessments (continued).

```
RED LOSSES TO THIS POINT
     ITEM          # LOST
       2            37.3
       3            19.8
       6            19.8
      11              .6
      16             3.2
      21             3.1
      25              .4
      29             2.9
      31             3.0

ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER
0
```

ARMOR ASSESSMENTS

```
   TOTAL RED LOSSES
ITEM   # LOST   CREW

  2     37.3
  3     19.8
  6     19.8
 11       .6
 16      3.2     9.6
 21      3.1     6.2
 25       .4      .8
 29      2.9     8.7
 31      3.0    12.0

   TOTAL BLUE LOSSES
ITEM   # LOST   CREW

  2     14.3
  3      3.4
 11       .1
 13      1.1     2.2
 16      2.2     2.2
 21      1.8     3.6
 29      1.8     3.6
 32       .9     2.7
```

DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

Y

Figure B-9.   Sample run of armor/antiarmor assessments (concluded).

e. **Infantry.** When the armor/antiarmor assessments are finished, the program proceeds to the infantry combat routine. Infantry assessments can be processed only if both forces contain infantry personnel in the weapon system array; otherwise, it is bypassed. The sample run of this routine is given in figure B-10. The input requirements are straightforward; the only variation in the user responses shown occurs when ambush tactics are not employed, in which case the question "IS BLUE AMBUSHING RED" is omitted. There is no multiple assessment capability for infantry combat. The inputs set the necessary parameters for the entire infantry battle being gamed, the losses are calculated and displayed, and the routine is ended.

```
DO YOU WISH TO PROCESS INFANTRY ASSESSMENTS?
Y
                    INFANTRY ASSESSMENTS

ENTER FRACT OF BLUE MANEUVER FORCES COMMITTED (MAX 1.)
.8
ENTER FRACT OF RED MANEUVER FORCES COMMITTED (MAX 1.)
.8
DO TANKS SUPPORT THE DISMOUNTED INFANTRY IN THIS SECTOR
Y
ENTER # HOURS OF INFANTRY ATTACK (MAX = 6.).
2.5
ARE AMBUSH TACTICS BEING EMPLOYED
Y
IS BLUE AMBUSHING RED
Y
                    RED INFANTRY LOSSES
                    ITEM          #LOST
                      3            56.9
                      1             2.8


                    BLUE INFANTRY LOSSES
                    ITEM          #LOST
                      1             .1
                      3            4.9
                      6            4.9
                     11             .2

DO YOU WISH TO SUBTRACT LOSSES FROM FOURCE STRUCTURES?

Y
```

Figure B-10. Sample Run of Infantry Assessments.

f. Attack Helicopter/Air Defense. The last type of combat to be
addressed for assessments is attack helicopter/air defense. This routine
is entered following completion of the infantry combat processing if
either force contains attack helicopters. The sample run in figure B-11
demonstrates the input requirements for completing the helicopter and air
defense assessments. The user is first given the opportunity to game Blue
ADA/Red-AH, then vice versa. The inputs are essentially the same in both
cases, except for Blue AH the user must select the missile fire launch
method. All possible user responses are demonstrated in figure B-11. It
should be noted that the use of the Red helicopters illustrates the
capability of the user to abort a helicopter mission before its
completion, if helicopter losses exceed 30 percent. In the Blue case in
figure B-11, the mission is assessed to its normal completion since losses
to the helicopter cell remain below 30 percent. The cycle of defining and
assessing helicopter cells can be continued until all sorties have been
depleted or all the helicopters killed. The user determines when the
assessments for each helicopter/air defense combination are terminated.
Upon completion of this routine, the program returns to the DECISION POINT.

```
DO YOU WISH TO PROCESS AIR DEFENSE/ARMED HELICOPTER ASSESSMENTS?
Y
                    AIR DEFENSE/ARMED HELICOPTER ASSESSMENTS
DO YOU WISH TO GAME BLUE ADA AND RED A/C?
Y

THE FOLLOWING SETS PARAMETERS FOR BLUE AD WEAPONS

ENTER BLUE WEAPON CONTROL (STATUS) FACTOR-
999
            FOR WEAPON FREE ....... ENTER 1
                WEAPON TIGHT ...... ENTER 2
                WEAPON HOLD ........ ENTER 3
ENTER BLUE WEAPON CONTROL (STATUS) FACTOR-
1

IS DEFENDER IN HIGH DENSITY SECTOR (BN < 4 KM)?
Y

ENTER PRIORITY WEIGHTING FACTOR FOR BLUE ADA TARGETS (MAX=5)-
5

THE FOLLOWING SETS PARAMETERS FOR RED HELICOPTERS

ENTER TOTAL FLYING TIME FOR RED A/C THIS CI (MAX= 6.0 HOURS)-
6

BEGIN BUILDING CELLS OF RED A/C TO FLY AGAINST BLUE GROUND FORCES

TOTAL RED A/C AND SORTIES AVAILABLE THIS CI
     A/C TYPE         # A/C        # SORTIES
        62              8.            49.
        63              8.            49.
ENTER A/C ELMT #,NO. ADDED (+ OR -) TO CELL--0,0 TO STOP-
62,8
NEXT ENTRY-
63,8
NEXT ENTRY-
0,0
ENTER STANDOFF RANGE INDEX-
999
IF RANGE IS  500 ENTER 1
            1000       2
            1500       3
            2000       4
            2500       5
            3000       6
            3500       7
            4000.      8
            4500       9
            5000      10
```

Figure B-11. Sample Run of Attack Helicopter/Air Defense Assessments
(continued next page).

```
ENTER STANDOFF RANGE INDEX-
3
LOSSES EXCEED 30% AFTER 9 POPUPS
DO YOU WISH TO SEE LOSSES?
Y

RED HELICOPTERS KILLED
   TYPE      # KILLED
    62          2.6
    63          2.5

BLUE GROUND FORCES KILLED
   TYPE      # KILLED
    16          3.9
    21          3.7
    29          1.1
    32          5.0
    39          5.1
DO YOU WISH TO ABORT THIS SORTIE?
Y
DO YOU WISH TO FLY ANOTHER CELL OF RED A/C?
N
DO YOU WISH TO GAME RED ADA AND BLUE A/C?
Y

THE FOLLOWING SETS PARAMETERS FOR RED AD WEAPONS

ENTER RED WEAPON CONTROL (STATUS) FACTOR-
1
ENTER PRIORITY WEIGHTING FACTOR FOR RED ADA TARGETS (MAX=5)-
5
```

Figure 8-11. Sample Run of Attack Helicopter/Air Defense Assessments
(continued).

THE FOLLOWING SETS PARAMETERS FOR BLUE HELICOPTERS

ENTER TOTAL FLYING TIME FOR BLUE A/C THIS CI (MAX= 6.0 HOURS)-
6

BEGIN BUILDING CELLS OF BLUE A/C TO FLY AGAINST RED GROUND FORCES

TOTAL BLUE A/C AND SORTIES AVAILABLE THIS CI

A/C TYPE	#A/C	# SORTIES
61	8.	49.
62	8.	49.

ENTER A/C ELMT #,NO ADDED (+ OR -) TO CELL--0,0 TO STOP
61,8
NEXT ENTRY-
62,8
NEXT ENTRY-
0,0
ENTER AH MISSILE FIRE LAUNCH METHOD-
999
   FOR INDIRECT FIRE LAUNCH ....ENTER 1
   FOR DIRECT FIRE (AUTO OR REMOTE CONTROL)....ENTER 2
ENTER AH MISSILE FIRE LAUNCH METHOD-
1
ENTER STANDOFF RANGE INDEX-
3
15 POPUP SORTIE COMPLETED.
DO YOU WISH TO SEE LOSSES?
Y

BLUE HELICOPTERS KILLED

TYPE	# KILLED
62	1.8

RED GROUND FORCES KILLED

TYPE	# KILLED
16	2.2
21	.7
29	.2
31	2.6
39	1.1

DO YOU WISH TO FLY ANOTHER CELL OF BLUE A/C?
N
DISPLAY LOSSES?
Y

Figure 8-11 Sample Run of Attack Helicopter/Air Defense Assessments
(continued)

AH/AD ASSESSMENTS

TOTAL BLUE LOSSES

ITEM	# LOST	CREW
2	59.2	
13	5.9	11.7
16	3.9	3.9
21	3.7	7.5
29	1.1	2.2
32	5.0	14.9
39	5.1	15.3
62	1.8	3.7

TOTAL RED LOSSES

ITEM	# LOST	CREW
2	26.4	
3	4.2	
6	4.2	
11	.2	
16	2.2	6.5
21	.7	1.4
29	.2	.6
31	2.6	10.2
39	1.1	8.9
62	2.6	5.3
63	2.5	5.1

DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

Y

Figure 8-11 Sample Run of Attack Helicopter/Air Defense Assessments
(concluded)

B-7. LOSS APPORTIONMENT. After all the combat has been assessed in the Jiffy Game, the losses that resulted must be apportioned to the units that were loaded into sector "1" of critical incident "TEST". The remaining weapon systems may be displayed through the entry of DECISION POINT 6, figure B-12). The user accomplishes the loss apportionment through DECISION POINT 4. Figure B-13 contains the sample run of the loss apportionment. The user can change the combat intensity level of any units before the apportionment is made. The combat intensity level of a unit can be changed permanently by adding 10 to the new level. Thus a "4", for example, in response to enter new combat intensity would change the level of the unit for the current apportionment only, while a "14" would change the level of the unit permanently on the force file. An apportionment message is displayed, which indicates that there is an insufficient number of Red type 2 weapons to be properly apportioned. The apportionment of these types of weapons must be ignored. This situation occurs generally to small arms and other dismounted infantry systems. The assessment of these weapons is based on infantry casualties and not the number of weapons actually engaged in combat. At this point, each unit is subjected to the loss apportionment algorithm, and its resulting unit effectiveness is displayed as shown in figure B-13. At the same time a more comprehensive output of each unit, the number and type of weapons it lost, and the number and type of weapons remaining in the unit is written on the STATS file, a detailed file on the combat statistics. This portion of the STATS file is known as the UNIT STATUS (see appendix C). After the losses have been apportioned to all units gamed, the user has the capability to display any unit and the weapons that remain in it. Figure B-13 also illustrates the use of decision point 12. This run was made by adding 12, 1 and the apportionment answers at the end of a previous file of answers through the assessment process. Figure B-13 illustrates the use of answers 12 and 2 to disconnect the output of the start of a run. If it is not connected previously, output is always connected automatically at the end of a file of answers, when a question is asked requiring an interactive response.

```
              FORCE  STRUCTURES
    ELEMENT      BLUE        RED
       1         99.         98.
       2         12.          0.
       3         81.         26.
       5        100.        100.
       6         95.         26.
      11         10.          7.
      13          3.          6.
      16          4.          4.
      21          3.          5.
      39          7.          6.
      31          0.          4.
      32          4.          0.
      36         10.          0.
      37          0.          8.
      39          5.          9.
      43          7.          5.
      46         10.         10.
      50         10.          9.
      61         10.          0.
      62          8.          7.
      63          0.          8.
```

Figure 8-12 Weapon Systems After Attrition Process.

```
SPECIFY PURPOSE OF THIS RUN
??? D E C I S I O N   P O I N T  ???
12
ENTER OPTION - 1 TO CONNECT; 2 TO DISCONT
2
??? D E C I S I O N   P O I N T  ???
4
DO YOU WISH TO CHANGE COMBAT INTENSITY LEVEL FOR ANY UNIT?
Y
ENTER PARENT ID -
1
ENTER UNIT ID-
11
ENTER NEW COMBAT INTENSITY -
5
DO YOU WISH TO CHANGE COMBAT INTENSITY LEVEL FOR ANY UNIT?
N
INSUFFICIENT CBT INTENSITY LEVELS HAVE BEEN ASSIGNED FOR ITEM 2 OF RED
FORCE AUTO-ALLOCATION OF ABOVE WPN SYSTEMS HAS BEEN INITIATED
EFFECTIVENESS OF 11          = 63.
EFFECTIVENESS OF 12          = 94.
EFFECTIVENESS OF 13          = 94.
EFFECTIVENESS OF 14          = 41.
CUMMULATIVE EFFECTIVENESS OF 1      = 72.
EFFECTIVENESS OF 21          = 72.
EFFECTIVENESS OF 22          = 75.
EFFECTIVENESS OF 23          = 87.
EFFECTIVENESS OF 24          = 46.
CUMMULATIVE EFFECTIVENESS OF 2      = 68.
DISPLAY A UNIT?
N
??? D E C I S I O N   P O I N T  ???
END OF ANSWER FILE - INPUT FROM TERMINAL
??? D E C I S I O N   P O I N T  ???
```

Figure B-13.   Sample Run of Loss Apportionment.

B-8. BATTLE STATISTICS. After the loss apportionment is completed, the user should always exercise DECISION POINT 5, which outputs to the STATS file the remainder of the battle statistics and postprocessor information as discussed in appendix C. An example is given in figure B-14. In addition to the standard loss exchange ratios (as discussed in appendix C) an LER involving only item code 16 is requested. Besides the statistics for the current sector, cumulative statistics from combinations of previously gamed sectors can be obtained, if desired.

```
??? D E C I S I O N   P O I N T ???
5 SECTOR OUTPUT FOR SECTOR        1.  OF CI TEST          ?
Y
OPTIONAL LER?
Y
ENTER BLUE WPN (0 WHEN DONE)-
16
NEXT-
0
ANOTHER LER?
N
SELECT OUTPUT OPTION (0 IF DONE)-
999
INPUT        OUTPUT CREATED
   1         SINGLE SECTOR
   2         PARTIAL CI (MULTIPLE SECTOR)
   3         FULL CI
   4         PARTIAL GAME (MULTIPLE CI)
   5         FULL GAME
SELECT OUTPUT OPTION (0 IF DONE)-
0
```

Figure 8-14. Output selection in sample run.

B-9. TERMINATION. The Jiffy Game is ended through DECISION POINT 9. Figure B-15 is an example of termination procedures. The user is asked if all sectors of the current CI have been gamed. A negative response ends the program immediately. An affirmative response updates the history file to allow another CI to be gamed at DECISION POINT 1, when the program is next executed. The user is given an opportunity to obtain cumulative statistics and postprocessor information for the whole CI and also for all CIs so far gamed. After the program has ended the STATS file should be routed to a high-speed printer. The user may also obtain a permanent record of the questions and his answers during the current run by routing the QA file to a high-speed printer.

??? D E C I S I O N   P O I N T ???
9
HAS THE LAST SECTOR BEEN GAMED FOR CI TEST   ?
Y
DO YOU WANT CI STATS OUTPUT FOR CI TEST   ?

N
DO YOU WANT GAME STATS OUTPUT THROUGH CI TEST   ?

N

Figure B-15 Termination of the Sample Run.

APPENDIX C

OUTPUT FROM JIFFY GAME SAMPLE RUN

(POSTPROCESSOR)

APPENDIX C

OUTPUT FROM JIFFY GAME SAMPLE RUN

(POSTPROCESSOR)

C-1. PURPOSE AND SCOPE. This appendix discusses and provides examples of the hard copy results obtained following a complete run of the Jiffy Game.

C-2. GENERAL. During execution of some portions of the Jiffy Game, the program creates a file containing detailed results of the combat being gamed. This information is not displayed on the console screen by the program but is stored in the local file area of the terminal and can be printed out on a high speed printer after the program is exited. For each sector of combat assessed, two major types of information are made available to the user by this process. One is a unit status file of the forces in the sector and the other is a series of tables giving detailed combat loss data resulting from the assessments. The name of the local file containing these data is STATS.

C-3. POSTPROCESSOR. In addition to the sector being gamed, cumulative data can be obtained using information stored on the history file about previously gamed sectors. Thus, the Jiffy program, with the history file, serves as a postprocessor that will assist the analysts and gamers working with the Jiffy war games in studies. Some of the measures are defined in the following several sections.

C-4. UNIT STATUS. The input of a "4" at the DECISION POINT in the Jiffy Game initiates the apportioning of combat assessment losses to the individual units that were loaded into a sector as demonstrated in figure B-13. As this apportionment is being made, the program writes the current status of each unit and each parent unit to the STATS file. Figure C-1 is an example of this output.

C-5. FORCE STRUCTURE. The force structure entered in the current sector is obtained from the force structure array before assessments are calculated. An example is shown in figure C-2.

C-6. LOSS AND DAMAGE DISTRIBUTION. Figure C-3 is an example of the Loss and Damage Distribution table for the current sector obtained when the user answered "Y" after DECISION POINT 5 (see figure B-14). Several other loss statistics are obtained at the same time and discussed below.

C-7. SOURCE OF LOSS. Four losses by category of source of loss are obtained. These are listed below and are shown in tables a and d in

figure C-4. The tables for b and c are similar to a and d and thus are omitted.

a. Blue losses by victim type.

b. Blue losses by victim category.

c. Red losses by victim type.

d. Red losses by victim category.

C-8. KILLER-VICTIM MATRICES. The Jiffy output generally contains 13 killer-victim tables.

a. One table is output for each side as killer in each of the following five killer categories.

- Armor.

- Artillery.

- Air Defense.

- Helicopter.

- Infantry.

One table is output for the defender mines as killer. Finally, two aggregated matrices are produced.

b. Figure C-5 illustrates the Blue armor matrix and the two aggregated matrices.

C-9. AMMUNITION EXPENDITURE. Figure C-6 gives the ammunition expenditures of both Blue and Red during the sample run in appendix B.

C-10. RATIO STATISTICS.

a. Figure C-7 consists of ratio statistics to describe combat results.

b. The ratios are of the following five types.

(1) Loss exchange ratio (LER). This is Red losses divided by Blue losses.

(2) Surviving maneuver force ratio (SMFR). A ratio is produced for each side. For example, for Blue the SMFR is Blue's

surviving force divided by Blue's starting force. Current usage is not restricted to traditional maneuver systems, as explained in subparagaph c below.

      (3) Surviving maneuver force ratio differential (SMFRD). This is SMFD (Blue) minus SMFD (Red).

      (4) Initial force ratio (IFR). This is the Red initial force divided by the Blue initial force.

      (5) Force exchange ratio (FER). This is the LER divided by the IFR.

   c. The weapons systems covered in these ratios in the set of three tables (figure C-7) are:

      (1) Major weapon systems (including maneuver elements, all artillery, and helicopters).

      (2) Armored systems only. (Some scenarios may not count dismounted antitank weapons.)

      (3) Optional LER (the user may select the weapon systems).

   d. Each of these tables has two parts--in the first the systems count equally and in the second they are weighted by firepower scores.

```
************************************************************************

      PARENT=1                    **     UNIT=1
      EFF= 72.                    **     EFF= 63.

      EL     LOST    REMAIN       **     EL     LOST    REMAIN
      1       .5      99.5        **     32     6.8       4.0
      2      92.3     59.5        **     36      .1       9.9
      3       8.8     91.2        **     39     5.1       4.9
      5       0.0    100.0        **      2     33.5      0.0
      6       5.4     94.6        **
     11       .3       9.7        **     ******************************
     13      7.4      2.6         **
     16      6.1      3.9         **
     21      6.7      3.3         **     UNIT= 12
     29      3.1      6.9         **     EFF= 94.
     32      6.0      4.0         **
     36       .1      9.9         **     EL   LOST        REMAIN
     39      5.1      4.9         **
     43      3.3      6.7         **     61    0.0         10.0
     46       .1      9.9         **     62    1.8          8.2
     50       .1      9.9         **      2    3.6          0.0
     61      0.0     10.0         **
     62      1.8      8.2         **
                                 **

************************************************************************
   UNIT= 13                      I      UNIT= 14.
   EFF= 94.                      I      EFF= 41.
                                 I
   EL     LOST    REMAIN         I      EL     LOST      REMAIN
                                 I
   43      3.3      6.7          I       1      .5        99.5
   46       .1      9.9          I       3     8.8        91.2
   50       .1      9.9          I       5     0.0       100.0
    2      14.7      0.0         I       6     5.4        94.6
                                 I      11      .3         9.7
                                 I      13     7.4         2.6
                                 I      16     6.1         3.9
                                 I      21     6.7         3.3
                                 I      29     3.1         6.9
                                 I       2    40.5        59.5
                                 I
```

Figure C-1. Unit Status File
(continued next page).

****

```
   PARENT=2              **    UNIT=11
    EFF= 68.             **     EFF= 72.

    EL    LOST   REMAIN    **    EL    LOST   REMAIN
    1     1.6    98.4     **    31    6.3     3.7
    2    127.9   53.8     **    37    1.7     8.3
    3     75.3   24.7     **    39    1.5     8.5
    5     0.0   100.0     **     2   38.9     0.0
    6     75.3   24.7     **
   11     3.0     7.0     **
   13     3.9     6.1     **
   16     5.8     4.2     **    ******************************
   21     4.8     5.2     **
   29     3.8     6.2     **    UNIT= 12
   31     6.3     3.7     **    EFF= 94.
   37     1.7     8.3     **
   39     1.5     8.5     **    EL  LOST       REMAIN
   43     4.6     5.4     **
   46      .4     9.6     **    62    2.6       7.4
   50     1.2     8.8     **    63    2.5       7.5
   62     2.6     7.4     **     2   10.2       0.0
   63     2.5     7.5     **
                          **
```

****

```
   UNIT= 13               I    UNIT= 14.
   EFF= 87.               I    EFF= 46.
                          I
   EL    LOST   REMAIN    I    EL    LOST    REMAIN
                          I
   43     4.6    5.4      I     1     1.6     98.4
   46      .4    9.6      I     3    75.3     24.7
   50     1.2    8.8      I     5     0.0    100.0
    2    32.6    0.0      I     6    75.3     24.7
                          I    11     3.0      7.0
                          I    13     3.9      6.1
                          I    16     5.8      4.2
                          I    21     4.8      5.2
                          I    29     3.8      6.2
                          I     2    46.2     53.8
                          I
```

Figure C-1.   Unit Status File (concluded)

ONE SECTOR OUTPUT FOR CI- TEST   :   SECTOR   1.

FORCE STRUCTURE	ELEMENT	BLUE	RED
	1	100.	100.
	2	100.	100.
	3	100.	100.
	4	100.	100.
	5	100.	100.
	6	100.	100.
	11	10.	10.
	13	10.	0.
	16	10.	10.
	21	10.	10.
	29	10.	10.
	31	0.	10.
	32	10.	0.
	36	10.	0.
	37	0.	10.
	39	10.	10.
	43	10.	10.
	46	10.	10.
	50	10.	10.
	61	10.	0.
	62	10.	10.
	63	0.	10.

Figure C-2. Force Structure

C-6

LOSS AND DAMAGE DISTRIBUTION

BLUE FORCE

WPN TYPE	TOTAL DAMAGED OR LOST	NUMBER LOST	NUMBER DAMAGED	EXCEED THEATER REPAIR	COSCOM REPAIR	DIV REPAIR
2	93.	93.	0.	0.	0.	0.
3	9.	9.	0.	0.	0.	0.
6	5.	5.	0.	0.	0.	0.
13	7.	7.	0.	0.	0.	0.
16	6.	3.	3.	1.	1.	1.
21	7.	2.	5.	3.	1.	1.
29	4.	1.	3.	2.	1.	0.
32	7.	7.	0.	0.	0.	0.
39	5.	5.	0.	0.	0.	0.
43	3.	0.	3.	0.	0.	3.
62	2.	2.	0.	0.	0.	0.

RED FORCE

WPN TYPE	TOTAL DAMAGED OR LOST	NUMBER LOST	NUMBER DAMAGED	2 DAYS	REPAIRABLE WITHIN 5 DAYS	10 DAYS
1	2.	2.	0.	0.	0.	0.
2	112.	112.	0.	0.	0.	0.
3	74.	74.	0.	0.	0.	0.
6	74.	74.	0.	0.	0.	0.
11	2.	2.	0.	0.	0.	0.
13	4.	4.	0.	0.	0.	0.
16	6.	0.	6.	3.	2.	1.
21	6.	0.	6.	3.	2.	1.
29	3.	0.	3.	2.	1.	0.
31	6.	0.	6.	3.	2.	1.
37	2.	0.	2.	1.	1.	0.
39	1.	0.	1.	1.	0.	0.
43	5.	0.	5.	3.	1.	1.
50	1.	0.	1.	1.	0.	0.
62	2.	0.	2.	1.	1.	0.
63	2.	0.	2.	1.	1.	0.

Figure C-3. Loss and Damage Distribution

Table a.

ONE SECTOR OUTPUT FOR CI- TEST   : SECTOR   1.

BLUE LOSSES BY SOURCE OF LOSS

VICTIM TYPE	TNE CBT	LT ATGM	GND ATGM	INF/CAV VEHICLE	MECH ATGM	TANK	MINES
2				5.0		10.0	
3				1.0		3.0	
6							
13						1.0	
16						2.0	
21				1.0		1.0	
29				1.0		1.0	
32						1.0	
43							
62							

****

VICTIM TYPE	IND FIRE	AD GUN	SHORAD MSL	LRAD MSL	ATK HEL	TACAIR	TOTAL
2	16.0		4.0	56.0	5.0	93.0	
3							9.0
6							5.0
13				6.0			7.0
16				4.0			6.0
21				4.0		1.0	7.0
29				2.0			4.0
32				6.0			7.0
39				5.0			5.0
43	3.0						3.0
62			2.0				2.0

Figure C-4. Losses by Source of Loss (continued next page)

C-8

Table d.

ONE SECTOR OUTPUT FOR CI- TEST   :   SECTOR   1.

RED LOSSES BY SOURCE OF LOSS

VICTIM CAT	INF CBT	LT ATGM	GND ATGM	INF/CAV VEHICLE	MECH ATGM	TANK	MINES
INF CBT		1.0	5.0	4.0		8.0	1.0
GD ATGM							
INF/CAV			2.0	2.0		3.0	
TANK			1.0	1.0		2.0	
IN FIRE							
AD GUN			1.0	1.0		1.0	
SH MSL							
LR MSL							
ATK HEL							
TRUCKS							
MORTAR							

****

VICTIM TYPE	IND FIRE	AD GUN	SHORAD MSL	LRAD MSL	ATK HEL	TACAIR	TOTAL
INF CBT	7.0				4.0		31.0
GD ATGM	4.0						4.0
INF/CAV	1.0				1.0		9.0
TANK					2.0		6.0
IN FIRE	1.0						1.0
AD GUN					3.0		6.0
SH MSL	2.0						2.0
LR MSL					1.0		1.0
ATK HEL		2.0		2.0			4.0
TRUCKS	1.0						1.0
MORTAR	5.0						5.0

Figure C-4.   Losses by Source of Loss (concluded)

C-9

KILLER-VICTIM MATRIX

BLUE ARMOR

VICTIM	*	11	12	13	14	15	16	17	21	22	23
2	*	3.8		7.8			17.9		7.8		
3	*	2.4		5.3			7.8		4.2		
6	*	2.4		5.4			7.8		4.2		
11	*			.1			.3		.2		
16	*	.3		.6			1.8		.5		
21	*	.3		.6			1.5		.7		
29	*	.3		.6			1.3		.7		
31	*	.3		.6			1.4		.7		

Figure C-5. Killer-Victim Matrix (continued)

AGGREGATED KILLER-VICTIM MATRIX

						BLUE KILLER								
VIC-TIM	3	5	11	13	16	21	32	36	39	43	46	49	50	61
1	.7											.9		
2		2.4	3.8	7.8	17.9	7.8	4.8	1.4	4.0	10.2	8.4	3.3	24.7	16.1
3	43.1	1.2	2.4	5.4	7.8	4.2				.2	1.4	.6	4.8	4.2
6	43.1	1.2	2.4	5.4	7.8	4.2				.2	1.4	.6	4.8	4.2
11	2.2			.1	.3	.2								.2
13										.9	.6		2.4	
16		.2	.3	.6	1.8	.5							.2	2.2
21		.2	.3	.6	1.5	.7					.2	.1	.5	.7
29		.2	.3	.6	1.3	.7					.1	.1	.3	.2
32		.2	.3	.6	1.4	.7					.1	.1	.3	2.6
37										.9	.6		.2	
39													.4	1.1
43										1.5	1.1		2.0	
46											.1		.3	
50			.1	.3								.3	.5	
62							1.2	.4	1.0					
63							1.2	.3	1.0					

Figure C-5. Killer-Victim Matrix (continued)

AGGREGATED KILLER-VICTIM MATRIX

RED

VIC-TIM	*	3	16	21	KILLER 25	39	43	46	50	62	63	66
1	*	.1							.4			
2	*		10.3	3.5	.5	3.6	5.8	7.4	3.4	18.8	36.7	2.0
3	*	4.9	2.5	.9			.1	.3	.1			
6	*	4.9					.1	.3	.1			
11	*	.2	.1									
13	*		.8	.3			.1	.2	.1	.8	5.1	
16	*		1.8	.3	.1					1.7	2.2	
21	*		1.2	.5	.1			.1		1.0	2.8	1.0
20	*		1.2	.5	.1			.1	.1	.5	.6	
32	*		.7	.2				.1		1.5	3.9	
36	*							.1				
39	*									2.7	2.4	
43	*						1.4	1.4	.5			
46	*							.1				
50	*								.1			
62	*					1.8						

Figure C-5. Killer-Victim Matrix (concluded)

ONE SECTOR OUTPUT FOR CI- TEST   :   SECTOR   1.

AMMUNITION EXPENDITURE

BLUE TYPE-NUMBER		RED TYPE-NUMBER	
1	0.	1	7.
2	0.	2	14.
3	0.	3	0.
4	0.	4	0.
5	0.	5	0.
6	0.	6	1.
7	0.	7	5.
8	0.	8	2.
9	0.	9	0.
10	416.	10	0.
11	24.	11	0.
12	0.	12	0.
13	0.	13	0.
14	0.	14	0.
15	327.	15	0.
16	0.	16	0.
17	0.	17	423.
18	0.	18	32.
19	0.	19	0.
20	241.	20	0.
21	0.	21	147.
22	0.	22	0.
23	0.	23	0.
24	127.	24	416.
25	0.	25	104.
26	0.	26	0.
27	0.	27	0.
28	0.	28	0.
29	0.	29	0.
30	0.	30	0.

Figure C-6. Ammunition Expenditure (continued next page)

AMMUNITION EXPENDITURE

BLUE TYPE-NUMBER		RED TYPE-NUMBER	
31	0.	31	0.
32	0.	32	0.
33	0.	33	0.
34	0.	34	0.
35	0.	35	0.
36	0.	36	21.
37	0.	37	11.
38	39.	38	0.
39	0.	39	0.
40	0.	40	763.
41	17.	41	7752.
42	0.	42	0.
43	840.	43	1501.
44	0.	44	12.
45	0.	45	0.
46	0.	46	0.
47	1403.	47	0.
48	51.	48	0.
49	0.	49	0.
50	0.	50	0.
51	0.	51	0.
52	0.	52	0.
53	0.	53	0.
54	0.	54	0.
55	0.	55	0.

Figure C-6. Ammunition Expenditure (concluded)

ONE SECTOR OUTPUT FOR CI- TEST   :   SECTOR   1.

RATIO STATISTICS
(STANDARD OUTPUT)

ALL MAJOR WEAPON SYSTEMS

	WEIGHTED EQUAL	*	WEIGHTED BY FPS
LER	$= \dfrac{35.0}{32.4} = 1.08$	*	$= \dfrac{5441.1}{4843.8} = 1.12$
SMFR (BLUE)	$= \dfrac{77.6}{110.0} = .71$	*	$= \dfrac{13646.2}{18490.0} = .74$
SMFR (RED)	$= \dfrac{75.0}{110.0} = .68$	*	$= \dfrac{11988.9}{17430.0} = .69$
SMFRD	$= .71 - .68 = .03$	*	$= .74 - .69 = .05$
IFR	$= \dfrac{110.0}{110.0} = 1.00$	*	$= \dfrac{17430.0}{18490.0} = .94$
FER	$= \dfrac{1.1}{1.0} = 1.1$	*	$= \dfrac{1.1}{.9} = 1.2$

ARMOR WEAPON SYSTEMS ONLY

		*	
LER	$= \dfrac{14.4}{15.9} = .91$	*	$= \dfrac{3000.4}{3278.8} = .92$
SMFR (BLUE)	$= \dfrac{14.1}{30.0} = .47$	*	$= \dfrac{2101.2}{5380.0} = .39$
SMFR (RED)	$= \dfrac{15.6}{30.0} = .52$	*	$= \dfrac{2379.6}{5380.0} = .44$
SMFRD	$= .47 - .52 = -.05$	*	$= .39 - .44 = -.05$

Figure C-7. Ratio Statistics (continued next page)

ONE SECTOR OUTPUT FOR CI- TEST : SECTOR 1.

RATIO STATISTICS
(STANDARD OUTPUT)

ALL MAJOR WEAPON SYSTEMS

	WEIGHTED EQUAL	*	WEIGHTED BY FPS
IFR	$= \dfrac{30.0}{30.0} = 1.00$	* =	$\dfrac{5380.0}{5380.0} = 1.00$
FER	$= \dfrac{.9}{1.0} = .9$	* =	$\dfrac{.9}{1.0} = .9$

OPTIONAL LER'S

LER	$= \dfrac{6.0}{6.0} = 1.00$	* =	$\dfrac{1116.0}{2574.0} = .43$

Figure C-7. Ratio Statistics (concluded)

APPENDIX D

THE AUTOMATIC LOADING PROCESS

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THE AUTOMATIC LOADING PROCESS

D-1. PURPOSE AND SCOPE. The current gamer practice for loading forces into a sector is to use an answer file. This appendix describes this process.

D-2. GENERAL. Answer files for each sector are prepared in editor and catalogued. When the forces are to be loaded in a given sector the appropriate answer file is attached and a special "load" call file is executed.

D-3. "CALL" FILE. An example of load call files is given below. Before executing this call file, the answer file would be attached with "A" as its local file name.

```
CONNECT,INPUT,OUTPUT
ATTACH,JIFFY,E3BINSEG,ID=SCORES,MR=1.
ATTACH,TAPE55,FORCEFILE,ID=XJIFFYM.
ATTACH,SEG,SEGMENT,ID=XJIFFYM,MR=1.
SEGLOAD,I=SEG.
JIFFY,A.
```

D-4. ANSWER FILE. An example of an answer file run is shown in figure D-1. This run loads all units of parent 1 and unit 21 of parent 2 into sector 7 of CI test.

```
???DECISION POINT???
1
ENTER CI MNEMONIC-
TEST
ENTER SECTOR NUMBER-
7
???OPTION???
1
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR-
1
ENTER UNIT ID (OR ALL)-
ALL
LOAD ANOTHER UNIT?
Y
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR-
2
ENTER UNIT ID (OR ALL)-
21
LOAD ANOTHER UNIT?
N
???OPTION???
0
DO YOU WANT TO SEE CODES?
N
DO YOU WISH TO SEE UNITS LOADED INTO SECTOR?
Y
UNITS LOADED INTO SECTOR  7.  FOR CI TEST
```

FORCE	PARENT	UNIT	TYPE	CIL	EFF
1	1	11	1	5	62
1	1	12	2	5	93
1	1	13	3	5	94
1	1	14	4	5	40
2	2	21	1	5	72

Figure D-1. Answer File

APPENDIX E

RUN MODIFICATION FOR BATCH PROCESSING

APPENDIX E

RUN MODIFICATIONS FOR BATCH PROCESSING

E-1. PURPOSE AND SCOPE. This appendix addresses the requirements for processing the Jiffy Game programs in a batch operating mode. Necessary program modifications and procedures for completing a batch run are described.

E-2. GENERAL. Designed to be an interactive computer model, the Jiffy model and all its associated programs require many inputs during execution. Ideally, inputs are entered by the user from a remote interactive terminal as the program is being run. However, there are several classified data arrays, stored in the computer external to any of the coded programs, which must be accessed; and security restrictions prevent access of these data from some of the remote terminals currently available to Jiffy Game users. To overcome this problem, a capability has been developed for processing the Jiffy Game in a batch operating mode without entirely sacrificing the interaction between the user and the game. The processes involved are diagrammed in figure E-1. The force file building process is impacted only minimally when the classified data are not accessible.

E-3. DATA REQUIREMENTS. It is only the requirement to access a classified data file that prevents interactive processing of the Jiffy Game programs on a nonsecure terminal. None of the coded programs contain classified information, nor do they create any classified files or output. Since it is the numbers in the data arrays that are classified, it has been possible to create an "unclassified" data file; that is, a file containing meaningless data values but paralleling the real data file in every other respect. With an unclassified file, the entire Jiffy Game can be processed interactively from any remote terminal. Obviously, the results obtained by doing so are meaningless, but this capability plays a key role in creating a batch run.

E-4. FORCE FILE CREATION. The force file building procedure discussed in appendix A requires processing of four programs. Of these, only one, tne FORCE program, requires access to the classified data file (CLDATA). The SRCFILE, the UNITFILE, and the PARENTFILE all can be constructed interactively from any remote terminal. The FORCEFILE can also be built, using the unclassified data file, at a nonsecure terminal. Even when the FORCEFILE is developed with unclassified data, the unit records created are essentially correct; the only consequence of doing so is that the unit effectiveness values computed for a unit must be reset with classified data. A separate program, called RESET, is used to make this one-time correction during the batch processing as described below.
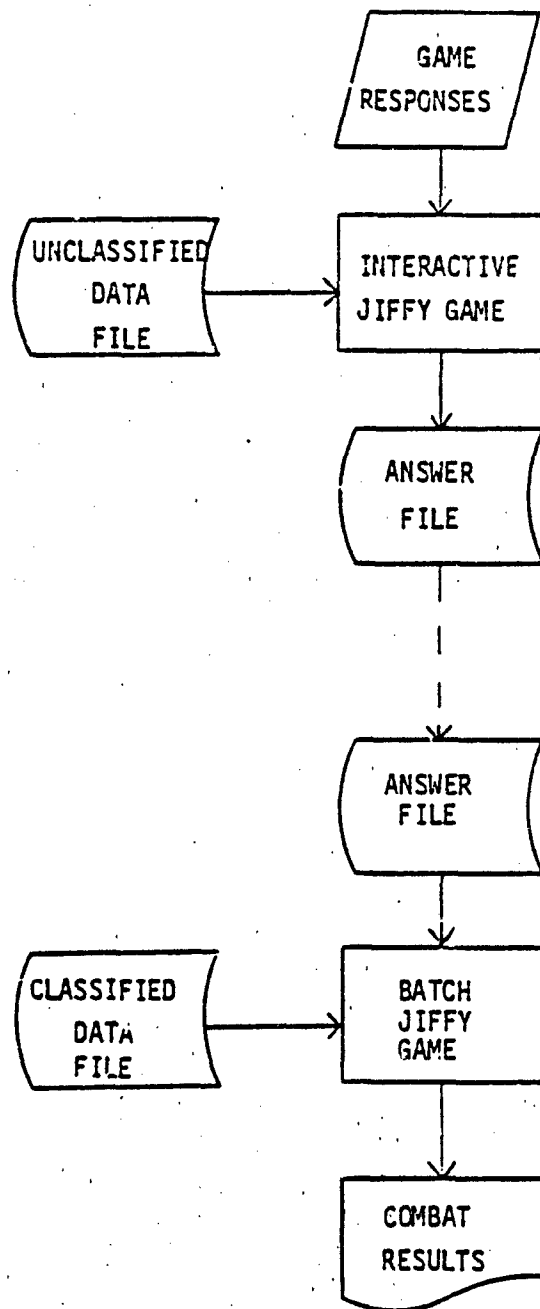
Figure E-1. Jiffy Game Batch Processing

E-5. ANSWER FILE. As indicated in figure E-1, it is necessary to create a file containing the "answers," or inputs, required during execution of the Jiffy Game program. This ANSWER file is created by running the Jiffy Game interactively from a remote terminal and inputting a "4" when asked to "SPECIFY PURPOSE OF THIS RUN". This causes the program to write each response, as it is entered at the terminal, onto a local file called ANSWER. During this type of run, the user makes essentially the same inputs demonstrated by the sample run in appendix B. Some differences may occur in the combat assessment routines (paragraph B-6). Since most of the classified data are used in the combat assessment calculations, the losses computed during an unclassified run (i.e., using the unclassified data file) have no meaning. Therefore, the displays of rate of advance statistics and combat losses shown in figures B-4 through B-11 are suppressed during an ANSWER file creation run. Also, any inputs based on losses previously calculated either are not made or are automatically adjusted during the batch run. An example of an input that cannot be made during batch processing is found in the attack helicopter/air defense routine (see figure B-11). Here, the sortie abort input is made only when helicopter losses reach a certain level. Since the helicopter losses during the unclassified interactive run differ from those during the classified batch run, aborting helicopter mission is automatically done by the program in all cases when losses exceed 30 percent. While some inputs affected by calculations made in the program cannot be deleted (e.g., the number of A/C entered into an attack helicopter cell as in figure B-11, or specifying the number of CLGP missions to fire as in figure B-7), provisions have been made in the program to adjust them automatically, if necessary, during a batch run. After the program has been ended, the ANSWER file that is created in the local file area must be catalogued into a permanent file.

E-6. BATCH RUN. The actual run of the Jiffy Game requires transfering the answer file via tape to the secure computer system, or punching a job deck and delivering it to the central computer system or site for processing. A sample card deck showing the commands necessary to complete the run is given in figure E-2. Note that the commands used in this job deck are basically the same as those used to initiate an interactive run in the RUNJIFFY "Call" file (figure A-1). Here, however, the ANSWER file created by the user must be attached, and the command "JIFFY, ANSWER" not only executes the program but also directs it to read the inputs from the ANSWER file. The output from this job includes everything found in the sample runs and outputs of appendixes B and C.

1. Job card...

2. Task card...

3. ATTACH, TAPE55, (force file)...

4. ATTACH, CLDATA, (classified data file)...

*5. ATTACH, RESET, (source code file)...

*6. FTN, I=RESET, L=0.

*7. LGO.

8. ATTACH, TAPE8, (history file)...

9. ATTACH, TAPE9, (SRC file)...

10. ATTACH, ANSWER, (answer file)...

11. ATTACH, SEG, SEGMENT.

12. SEGLOAD, I=SEG.

13. JIFFY, ANSWER.

14. REWIND, STATS.

15. COPY, STATS, OUTPUT.

16. End of file card.

*Required only if the Force File has not been reset or initially built
with classified data.

Figure E-2. Sample Batch Run Job Deck.

APPENDIX F

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DISTRIBUTION LIST

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